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See page 10

News Desk

Confusion over QL software

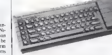
AN announcement by Sinclair's managing director Nigel Searle, that the four Psion QL software packages will be released in an enhanced form on a plug-in Rom pack seems to have resulted in some confusion

According to Psion's sales marketing manager Gerry Kelly negotiations between the two companies are still at a preliminary stage, and no agreement has so far been reached

Yet Nigel Searle publicly stated that the Psion's *Xchange* suite of programs (a much up-graded version of *Quill Easel, Archive* and *Abacus*) will appear on the QL as a single 128K Rom cartridge option which connects to the expansion port on the QL Psion's managing director declined to confirm Nigel Searle's claim "Psion has made no statement about doing the *Xchange* programs on Rom on the QL."

Psion will however release in the Autumn Version 2 of its Microdrive programs for the QL The upgraded packages will be supplied free to QLub

continued on page 5 ▸



Warner sells off Atari for $240 m

THE surprise sale of Atari to a new company headed by ex Commodore president Jack Tramiel has now taken place (see *PCW*, July 5) Tramiel's first move after taking over has been to substantially cut the workforce Several hundred of the 1 000 employees at

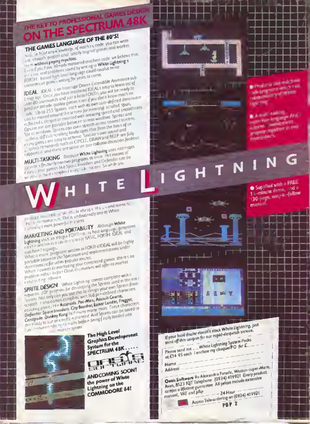
Jack Tramiel

the company's Sunnyvale headquarters will be laid off this week and Atari's El Paso manufacturing base has been closed with the loss of 300 jobs

Tramiel who founded Commodore, and turned it from a typewriter importer to a computer company has set up Tramiel Technology Ltd (TTL) It bought the home computer and video game divisions of Atari leaving Warner Communications with the coin operated games section and Ataritel, a new telephone making project However, it is thought Warner intends to sell these as well

continued on page 5

This Week


THE KEY TO PROFESSIONAL GAMES DESIGN
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that games like Space Invaders and Defender can be
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What is more, programs written in FORTH/IDEAL will be highly portable between the Spectrum and implementations under development for other popular micros.
When it comes to marketing your completed games there's no problem either. In fact Oasis themselves will offer to market outstanding software.
SPRITE DESIGN
White Lightning comes complete with a separate 20K program for developing the Sprites used in the main system. Not only can you use this to design your own Sprites from scratch, it also comes complete with 168 pre-defined characters covering games like Asteroids, Pac-Man, Assault Course, Defender, Space Invaders, City Bomber, Lunar Lander, Frogger, Centipede, Donkey Kong and many many more. These characters are ready to use or can be enhanced. And Sprites can be saved to tape before being finally loaded into main program.
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Popular Computing Weekly,
12 13 Little Newport Street,
London WC2R 3LD
Telephone 01-437 4343
Telex 296275

Published by Sunshine Publications Ltd

ABC
MEMBER OF THE AUDIT BUREAU OF CIRCULATIONS

Registered at the Post Office as a newspaper

ISSN 0265-0509

Typeset by The Artwork Group
55 63 Goswell Road London EC1,
In association with Ink on Paper Ltd
Printed by East Midland Litho Printers Ltd Oundle Road Woodston,
Peterborough PE2 9QR.

Distributed by S M Distribution
London SW9 01 274 8611 Telex 261643

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Accuracy
Popular Computing Weekly cannot accept any responsibility for any errors in programs we publish although we will always try our best to make sure programs work

This Week

Editorial

So who s going to buy this machine from Commodore the Plus/4?

At first glance it looks attractive a 64K machine with built-in word processing, spreadsheet, graphics and database software all for a little under £250

But the machine also falls rather badly between two stools Its four software programs are at best, primitive — a tenth of the size of the four equivalent programs on the QL. So the Plus/4 s Rom software will quickly prove inadequate for all but the simplest applications

If the cost of a QL at £400 is too much then why not buy a Commodore 64? While the Plus/4 has the advantage of a better Basic and Ram available (60K compared with 39K) the 64 is two-thirds the price with a huge library of commercial programs already written for it You can buy a top-flight word processor program — *Paperclip* or the less expensive *Easy Script* — and still have change from £250

Unlike Sinclair with the Spectrum and the QL, Commodore has got itself into a bit of a hole In performance terms the Plus/4 is not a great advance on the 64 Certainly it is nothing like the jump from the Vic20 to the 64

This will make life rather difficult for Commodore It must promote the two similar machines in very different ways — the Commodore 64 will become the games machine and the Plus/4 will be for serious use (hence the four rather trivial built-in programs)

But it won t be that easy The 64 is quite capable of serious application and unless Commodore is very careful it may find that the 64 continues to sell at the expense of the Plus/4

Commodore can of course solve the problem by taking deliberate steps to kill off the 64 Are they ready to do that yet when the 64 is still so successful? I doubt it.

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Atari

continued from page 1

TTL paid $240m (£178m) in total for the Atari computer and video game divisions, and also aquired warrants giving it the option of buying one million Warner common shares

The sale of Atari to Tramiel was unexpected. It was known that Warner had been looking for a buyer for the last year, but the Dutch-based company Phillips were thought to be main contenders

The future of Atari projects such as its up-market $1 000 home computer and the video games designed by Lucasfilms is now unclear

Atari's rise and fall in the computer market was meteoric. Warner bought the company for $27m, and saw Atari's sales rising to $2bn in 1982

But in 1983, sales almost halved and Atari suffered a loss of $538 6m

Last September James Morgan was bought in from Pepsi by Warner as chairman. He set a target of profitability for Atari by the fourth quarter of 1984 and scrapped many Atari projects which did not look to be immediately profitable. He also cut staff by 1000 in order to reduce overheads

Morgan, however, has left the company since the TTL sale went through

Tramiel's strategy at Atari will be to concentrate on the low cost computer market — thus bringing it directly into competition with Commodore

QL software

continued from page 1

members. Explained David Potter: "We are not satisfied with the speed of *Quill*, for instance, since the QL doesn't have a dedicated video chip to speed up the process of printing to the screen. Version 2 cures the problem." Another new feature of Version 2 is 3D bars on the *Easel* program

Sinclair has announced the names of eleven software companies producing material for the QL. They are: Digital Research, Sagesoft, MicroApl, Scicon, Quicksilva, Lattice, Metacomco, Caxton, Psion, GST and Intelligent

Digital is expected to produce a range of languages for the QL. Sagesoft is converting its accounting suite. Intelligent will produce a chess program. Sinclair is working on a number of peripherals for the QL, the first of which will be a 128K Ram board

This will be followed by a 512K Ram board, Winchester disc interface, combined Modem (from Prism) and terminal emmulator, monitor, printer, IEEE interface and combined Centronics and Unix hard disc expansion unit. Sinclair is currently negotiating for the Unix operating system to be put onto the QL

The QL manual is to be substantially revised and existing manuals will be upgraded in August

Tandy withdraws from Dragon talks

TANDY has dropped out of negotiations to acquire in part the assets of the failed Welsh micro manufacturer Dragon Data.

The company had hoped, said managing director John Sayers, to have acquired the Dragon name and finished goods stock in order to provide support for existing users

However, Tandy has now decided that there is no possibility of restoring profits to the Kenfig assembly plant and, having failed to reach an agreement with the receivers Touche Ross, has pulled out

This leaves only one company — GEC — still in the bid ding for Dragon Data. A GEC spokesman declined to comment on the situation but it is widely expected that GEC will now continue to market the Dragon machines with the Dragon 32 dropping in price

Its launch of the Dragon MSX machine at the *Personal Computer World* Show in the Autumn now seems likely to be delayed until early 1985, because of component shortages. John Hiley, GEC's marketing support manager said: "I am not aware of any problems surrounding an MSX machine, but then GEC has not made any public statement regarding MSX at all."

Imagine hits more trouble

IMAGINE, the troubled Liverpool software house, was still holding its head above water last week, although over two thirds of the staff have been laid off

On Monday, July 2 a court ruling gave the company seven days to pay a £10,000 debt to VNU Business Publications. To raise the money Imagine last week sold 110,000 tapes from stock at 30 pence each to a German wholesaler. So far Imagine's creditors have twice called in bailiffs to the company's Liverpool offices, and Merseyside police are also "monitoring" Imagine's affairs, regarding non-payment to its creditors. The police spokesman stressed that no investigation into Imagine's affairs has yet been started

Full of Eastern promise

MELBOURNE House is producing a joystick controlled adventure for the Commodore 64 called *Zim Salabim*

The game's format is reminiscent of Sierra's 128K Apple adventure *King's Quest*. While you control the main character around the screen with the joystick, text input is also required to make the character perform actions, such as eating and drinking. The action of the game is based on Arabian Nights tales

Zim Salabim will cost £8 95 and should be released at the end of September

Fast action against piracy

A NEW group has been set up by representatives from all sides of the computer industry to press for action against software piracy

FAST (Federation Against Software Theft) specifically aims to lobby parliament in an attempt to get the 1956 Copyright Act updated so that it expressely includes computer software as protected material

Donald Maclean, deputy chairman of Thorn-Emi Video Ltd, and chairman of FAST, said, "It looks like there will be no time in this parliament of the next to pass a bill amending the Act, so we went to do it through a private members bill"

Nicholas Lyall, MP for mid-Bedforshire, has pledged his support for FAST and will be presenting a bill to parliament under the ten-minute rule on July 24. Under this hearing, the matter can be aired, and can pave the way for a private members bill

Donald Maclean, chairman of FAST

Running total

SINCLAIR is again sponsoring the Cambridge Festival half marathon on July 15

Among this year's entrants are Olympic runner Joyce Smith, last year's men's winner Bob Treadwell, Sir Clive Sinclair himself, and an contrant from the Falkland Islands. The total number of runners will be a record 2,500

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Letters

Micro dilemma

I was interested to read AJ Pimperton's criticism and comments on my article on Psion's *Quill* package and his remarks on a letter in the same issue. I think his comments that I compared the software business with business software rather than home micro software encapsulates a dilemma that the home micro industry will be faced with in the forthcoming year.

The breed of machines that are appearing — the MSX machines, the Advance, the QL and many more to come are no longer just games machines, they are capable of serious use, and compare favourably with existing single-user business systems.

Sinclair Research has clearly aimed the QL at the serious user, otherwise it would perhaps have included joysticks and free games software as part of the package. This means that the small retailer, to take an example of a potential user wanting to computerise his business is looking at the QL in comparison with the likes of Apple's Macintosh, Act's Apricot, and the Osbourne, and its bundled software. So the QL's software will be compared with such packages as *Wordstar, Supercalc, Multiplan* and *dBase*.

Packages such as *Tasword* and *Telewriter* have made the serious use of the home micro affordable, and I am an enthusiastic user of *Tasword* and have written three books using it. However, it would have been unfair to have compared it with *Quill* bearing in mind the QL's additional memory and superior keyboard. The home micro is now in a different league, which will make the selling of them all the more a specialist job.

Malcolm Davison
Burgess Hill
West Sussex

Reply to QL comments

I would like to reply to A Cunningham's letter (PCW, 7 June) with reference to his comments on the QL.

1) Superbasic is designed so that a user can advance from simple programs to more complex ones without the need for learning another language. The basic itself is fairly standard with a lot of extra features such as procedures.

2) Yes, I agree — poor show from Sinclair, still he is getting better.

3) I would rather have microdrives than a cassette port, although Sony mini discs would be even better.

4) If you prefer CP/M and Wordstar then I suggest you go and find an out of date machine like the Apple, pay about £1 000 for it and then wish you had something more flexible and powerful.

Finally, a comment about MSX. Now is not the time so try and standardise things. The market has changed radically in the last two years and it is sure to continue like this for a while. Two years ago, a 16K colour computer was rare, now you can buy a 128K colour computer for a similar price. How can a system like MSX expect to take full advantage of computers which are likely to be available in the near future.

Gary Watson
Plessey Defence Systems
Christchurch

Games release

I have had a CBM64 now for about four months and, quite honestly, I am fed up.

Not with my computer by any means, I still think it is the best machine in my price range. But it aggravates me the way games are always released on the Spectrum months before companies bother to produce them for the CBM64. Some software houses are good at making different versions available — especially Ocean. But I have still to see games like *Atic Atac* and *Jetset Willy* appear on the 64 even though, with the CBM64's superior graphics and sound, I dare say they could make a better job of the games!

Justin Kerswell
50 Oakfields
Broad Acres
Guildford

"We're waiting to see Sir Clive but there seems to be some delay."

A poor education

Graham Stock probably does not realise what he is arguing in his letter excusing "home piracy." Since when has it been all right to steal as long as (a) you claim you can't afford the thing, and (b) you can get away with it? Mr Stock should remember that the authors and publishers of good programs put in a great many hours of work to provide us with first-class material and spend a lot of money getting it to us. Many of the pirates are still at school and to suggest to them that it's all right to enjoy other people's work without paying for it is pretty poor education.

W H Stevenson
11 Johnston Terrace
Edinburgh

Interesting, witty?

Whenever Boris Allan gets his turn on the Ziggurat page, one can guarantee that he will have something interesting, witty, or provocative to say — and Vol 3 No 25 of *PCW* proved no exception. Thank heavens that someone has actually noticed how unsatisfactory reviews can be.

It was therefore with no little amusement that I turned to the New Release of Mosaic's *Width of the World* adventure in the same issue. I knew nothing about the program beforehand — and was almost as ignorant afterwards! We were told that the program was not good enough. Why? Because it has simple verb-noun entry, very simple graphics, and is written in Basic.

Now the curious thing is that one of the reviewer's yardsticks in this matter, along with *The Hobbit* and *Valhalla*, was *Knight's Quest*. Very sensible — *Knight's Quest* is a very fine adventure indeed. But it's a funny thing you know — *Knight's Quest* has very simple (very slow) graphics, is written in Basic, and accepts only simple commands.

What makes *Knight's Quest* a fine program is the ingenuity and complexity of its plot and the fertile imagination of its author. And in this regard, we, your readers, are no wiser about the really relevant facts concerning Mosaic's program than we were before.

This is the case in 90% of reviews in any magazine, particularly where adventure programs are concerned. Tony Bridge is really the only man worth listening to.

A Davis
46 Sycamore Road
Brookhouse
Lancaster

Bug discovery

As well as the bug which Alan Turnbull (*PCW* Vol 3 No 22) found in the ZX Microdrive Rom, I have discovered (to my misfortune) two other bugs.

If you attempt to save a program with less than about 500 bytes remaining (the Microdrive uses upto about 550 as soon as the Interface Rom is plugged in for Load/Save/Verify) the Microdrive will start up and will not save the program (or even stop) until you pull the plug and reset. The problem is caused by the designers of the Rom overlooking the stack. The unit tries to save, even if there is not enough memory to do so.

The second bug is that if you try to erase a filename which does not exist, it will start up for about a minute and then report with 0 OK, 0:1. There also appears to be an oddity when you try to save a program with ten Line 0 Rem statements in. It will spend about 15 seconds filling up the cartridge with rubbish and report with a 'Microdrive Full' error!

N Foster
Hinckley

COMMODORE 64 BASIC BEGINNER'S PACK . . .

A subtle blend of software and book to enliven the dullest of Commodore 64's.

The Software

Honey Aid 1: a complete utility that adds 28 new commands to Commodore 64 BASIC, in three groups

- **Toolkit** these commands help you to create your own programs in BASIC. One day you'll wonder how you did without them
- **Graphics** use colour and hires graphics with ease – decorate and colour your 64
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In addition – on the tape:

- **Char Gen** a full-featured character generator that will redefine any or all of the standard 64 characters, even the ones used by Char Gen – while it runs.
- **Sprite Gen** a sprite generator to define sprites – normal or enlarged, single colour or multicolour. Displays the sprite as it's defined. Transforms the design into DATA statements.
- **Composatune** explores the SID chip. Allows you to type in a tune and to store this in DATA statements. Later, you can recover this to re-create the tune. Buildasound lets you explore all the features of SID and hear them in action
- **Guesser:** a unique computer-aided-simulation (CAL) of a number-guessing game. Demonstrates how each statement works and shows it all in action
- **Hangman** a full hangman game to provide entertainment and education
- **Breakout** a video ball game, break down the wall to score
- **Blockade** a two-player game, trap your opponent, they're trapped – you win
- **Balltrap** get the ball in the net to win – frustrating but fun!
- plus, plus . . .

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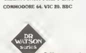
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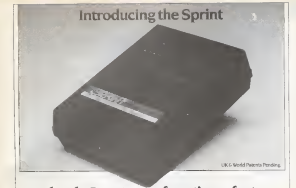
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Reptile's revenge

A version of the popular *Snake* game written by Ian Logan for the QL

The following listings quite nicely illustrate both the power of *Superbasic* and a few of its limitations. Of particular usefulness are

— the ability to define Windows and to print into them
— the definition of procedures
— the *Repeat/End Repeat* structure.
— *the For/End For* structure
— the *If Then, Else, End If* structure
— the ability to reserve memory using *Respr*

whereas one does miss

— the inability to define graphic characters with any ease
— the presence of only the single sound voice (but the extended *Beep* command helps a little)

Program Notes

The program has been written without the benefit of instructive *Remark* statements, so the following notes may be helpful

Line 130 *Mode 8* allows the use of green, yellow, magenta and cyan
Line 120–130 output windows the streams 3 & 4 are defined
Line 150–180 the main loop of the program. If the playing ends then 'start' again
Line 210–390 prepare the initial display. The playing area has a height *h* of 16 characters and a width *w* of 33 characters
Line 440–470 the score *sc* is set to zero, the play-on flag *f* is cleared, the number of targets *n* is set to 100
Line 480–560 The positions for the targets are selected at random. The appropriate locations in the reserved memory are marked 'in use' *f* and the targets are displayed
Line 570–630 A snake of size *one* segment is created at Line 8 and Row 16. This position is stored in a position string *P*
Line 860–1000 The snake moving procedure. The various steps are 1) return if the *s* key is being pressed 2) Alter the direction parameters (*lo rc ah e d*) depending on which cursor key is being pressed 3) Return if the snake has reached the edge of the playing area 4) Print-over the head of the snake with either a space character or a crosshatch character depending on whether the snake has one or more segments 5) Find the value *v* of the location where the head of the snake is now 6) If the location is 'free' (*v*=0) then shorten the snake 7) If the target has been hit then add 1 to the score and make a beep (really a munch)
Line 1020–1090 The procedure *Play* is defined. This is the main control procedure and playing continues until the play-on flag *f* becomes set
Line 1110–1260 The procedure *Ended* is defined. Here the suitable messages are selected and the program waits for the user to press either the *Enter* or the *s* keys. If no key is pressed within 20 seconds the demonstration procedure is called
Line 1280–1320 The controller procedure for the demonstration mode
Line 1340–1480 The *Demo* procedure is defined. The procedure contains a series of calls to the snake-moving procedure so that the snake sweeps backwards and forwards across the screen until all the targets are hit. Try writing your own *Demo* procedure! It is not too difficult to make it appear that the snake is *intelligent* and much better at getting all the targets than any human player

Note

On some early machines the *At* command parameters x and y are defined y and x. In this case the parameters b and c, l and r and tl and rt will have to be transposed

```
100 REMark     QL SNAKE
110 REMark ..............................
120 MODE 8
130 OPEN #3.con_448x190a30x16_0
140 OPEN #4.con_448x50a30x206_0
150 REPeat start
160 initial
170 plav
180 ended
190 END REPeat start
200 REMark ..............................
210 DEFine PROCedure initial
220 WINDOW 512,256,0,0
230 PAPER 4
240 CLS
250 INK #4,0
260 PAPER #4.7
270 CLS #4
280 BORDER #4.10,4
290 CSIZE #4,3,1
300 CURSOR #4,30,3
310 PRINT #4."QL SNAKE";
320 CSIZE #4.2,0
330 CURSOR #4,200.0
340 PRINT #4,"Score = 0"
350 INK #3.7
360 PAPER #3.0
370 CLS #3
380 BORDER #3.10,4
390 h=16: w=33
400 q=RESPR(0):IF q>262000 THEN
q=RE0PR(700)
410 FOR a=q TO q+700 STEP 4
420 POKE_L a,0
430 END FOR a
440 sc=0
450 f=0
460 PAPER #3,2
470 n=100
480 FOR a=1 TO n
490 REPeat d
500 b=RND(0 TO h): c=RND(0 TO w)
510 IF b=8 AND c=16 THEN NEXT d
520 IF NOT PEEK (q+b*(w+1)+c)
THEN EXIT d
530 END REPeat d
540 POKE q+b*(w+1)+c,1
550 AT #3,b,c: PRINT #3,CHR$(42)
560 END FOR a
570 PAPER #3,0
580 INK #3,6
590 l=8: r=16: lc=1: rc=0: d=191
600 AT #7.1,r: PRINT #3.CHR$(d)
610 POKE q+l*(w+1)+r,2
620 DIM p$(220)
630 p$=CHR$(l)&CHR$(r)
640 END DEFine
650 REMark ..............................
660 DEFine PROCedure snake(i)
670 IF KEYROW(3)&&0 THEN f=1: RETurn
600 SELect ON i
690  =2  :IF d<>189 THEN lc=0 :
rc=-1: d=188
700  =16 :IF d<>188 THEN lc=0 : rc=1
: d=189
710  =4  :IF d<>191 THEN lc=-1: rc=0
: d=190
720  =128:IF d<>190 THEN lc=1 : rc=0
: d=191
730 END SELect
740 lf=l: rf=r: p=LEN(p$)
750 l=l+lc: r=r+rc
760 IF l>h OR r>w OR l<0 OR r<0 THEN
770  f=1: AT #3,lf,rf: PRINT #3,CHR$(d)
: RETurn
780 END IF
790 IF p=2 THEN
000  AT #3.lf,rf: PRINT #3,CHR$(32)
010 ELSE
820  AT #3,lf,rf: PRINT #3,CHR$(192)
030 END IF
840 AT #3,l,r: PRINT #3,CHR$(d)
850 v=PEEK(q+l*(w+1)+r)
860 POKE q+l*(w+1)+r,2
070 p$=p$&CHR$(l)&CHR$(r)
080 SELect ON v
890  =0:la=CODE(p$(1))

900     ra=CODE(p$(2))
910     AT #3,la.ra: PRINT #3.CHR$(32)
920     POKE q+la*(w+1)+ra,0
930     p$=p$(3 TO LEN(p$))
940  =1:sc=sc+1
950     BEEP 1000,10.40,100,10
960     CURSOR #4.296,0: PRINT #4.sc
970     IF sc=n THEN f=1
980  =2:f=1
990 END SELect
1000 END DEFine
1010 REMark ..............................
1020 DEFine PROCedure plav
1030 CURSOR #4,0,20
1040 PRINT #4,"Plaving - use cursor
keys (S=stop)"
1050 REPeat p
1060 i=KEYROW(1)
1070 snake i: IF f THEN EXIT p
1080 END REPeat p
1090 END DEFine
1100 REMark ..............................
1110 DEFine PROCedure ended
1120 CURSOR #4,0,20
1130 FLASH #4.1
1140 IF sc=n THEN
1150  PRINT#4."Success  - ";
1160 ELSE
1170  PRINT #4,"Finished - ";
1180 END IF
1190 PRINT #4."ENTER (plav) - D (demo)"
1200 FLASH #4.0
1210 REPeat s
1220 k=CODE(INKEY$(1000))
1230 IF k=0 OR k=60 OR k=100 THEN
democontroller
1240 7F k=10 THEN CLS #3: CLS #4:
RETurn
1250 END REPeat s
1260 END DEFine
1270 REMark ..............................
1280 DEFine PROCedure democontroller
1290 initial
1300 demo
1310 ended
1320 END DEFine
1330 REMark ..............................
1340 DEFine PROCedure demo
1350 CURSOR #4,0,20
1360 PRINT #4," Demonstration -
press S to stop"
1370 FOR e=9 TO 10: snake 128: IF f
THEN RETurn
1380 FOR e=17 TO 33: snake 16: IF f
THEN RETurn
1390 FOR e=11 TO 16: snake 128: IF f
THEN RETurn
1400 FOR ee=1 TO 9
1410 FOR e=33 TO 1 STEP -1: snake 2:
IF f THEN RETurn
1420 snake 4: IF f THEN RETurn
1430 FOR e=1 TO 33: snake 16: IF f
THEN RETurn
1440 snake 4: IF f THEN RETurn
1450 END FOR ee
1460 END DEFine
1470 REMark ..............................
```

What the census saw

***Christina Erskine** talks to historian John Palmer who is busy putting the Doomsday Book onto a computer.*

A curious anomaly exists at Hull University. The history students are allocated four times as much memory space on the university's mainframe computer as the computing scientists.

This state of affairs is due entirely to one course offered to final year historians: study of the Doomsday Book, 'the census of landowners and details of property commissioned by William the Conqueror in 1066, and completed twenty years later.

The text of the Doomsday Book — between two and three million words — takes up 50 000K on the computer, and offers students the chance to study the book in an original way, bringing to light previously undiscovered facts about life in England after the Norman conquest.

The idea of putting the book onto the computer was the brainchild of Dr John Palmer, senior lecturer in History at Hull, who began work on it as a teaching package over five years ago.

"Final year students at Hull all spend half their time studying a special subject. Only original sources may be used, making it very close to pure research," explained John.

"I had to choose an option to add to the list for that course and I was interested in the potential of computers, because I felt there were so many things one could do with a computer that could be well-nigh impossible without.

"The Doomsday book was something of a departure for me — I specialise in Mediaeval history — but it was an obvious are for study at Hull; we actualy have two copies of the version republished in 1783 in the library."

"only original sources may be used . . ."

"I was surprised to find that the Doomsday book had not previously been computensed, and it dawned on me that if the course was going to be offered at all I was going to have to do it myself, even though I knew absolutely nothing about computers at the time."

"Luckily, I managed to interest George Slater, one of the university programmers, in the project, and he took over the technical side."

The first stage of the project was to type all the text from the volumes on to the computer — a formidable task in itself and not one that John, with full-time teaching and research committments could undertake himself.

"I found I was ineligible for a research grant, but rather deviously, I managed to obtain four typists from the Government's manpower team."

The typing in stage took about 15 months to complete. The Doomsday book is written in Latin shorthand, using abbreviation symbols which cannot be directly represented on the keyboard, so John had to devise a code to signify these marks.

But the biggest headache was undoubtedly checking for typing errors — spelling was not standardised when the Book was written, and many different versions of the same word can appear in the manuscript.

The next stage was to produce a database package to enable specific information to be retrieved from the text.

". . . a vast amount of reading . . ."

When William the Conquerer commisioned the book, he was primarily interested in the relative wealth of his landowners, rather than a sociological survey of the country. However, by calculating the facts and figures from each section, one can gain an accurate picture of, for example, population, agriculture, social organisation or wealth distribution.

In the book, while each county is treated as a separate section, the county is then sub-divided according to the ownership of the land, rather than by village.

"Each 'manor' that a tenant-in-chief held is mentioned seperately," said John. "But a village can consist of more than one manor. In Bedfordshire, for example, there were 377 manors but 143 villages."

"Of course, it is quite possible to study the size and status of each community, but it involves a vast amount of reading and laborious calculations, which my students would neither have the time or patience for. But a database program on the computer can compare and calculate all the statistics in a matter of seconds." If you like, it acts as a very accurate cross index, and mathematician."

Because of the volume of text, the database programs themselves apply to each county separately.

From working on the database, John could see further potential for the Doomsday project.

"What I would like to do now is to make a computer version of the English translation, and transfer each county separately onto floppy disc. The discs and a sub-set of the applications package could then be sold, hired or lent to schools together with a floppy disc for their particular county."

"So far we have put Bedfordshire onto a 5 inch floppy disc for use with the BBC B and we have been able to use the graphics facility on the BBC to reproduce the original shorthand marks."

"If I can get some kind of a grant for a full-time programmer, there's no reason why all the counties shouldn't be on floppy disc for the BBC and available in the next two years. 1986, curiously enough, will be the Doomsday book's 900th anniversary."

But John is not setting 1986 as a final date to have finished with the Doomsday book and the computer.

. . . something of a cult following

"I've become so interested in it now that I can see myself continuing to research it for many years to come.

"Certainly the biography of Richard II I was planning on writing five years ago seems to have gone to the wall."

In the four years that the Doomsday book option has been available to Hull students as a special course, it has acquired something of a cult following.

"It's certainly something different", agreed John. "As far as I know, we're the only history department that uses a computer for anything other than statistics, and this is, of course, the only computerised version of the Doomsday book."

"I wouldn't say it's a widly popular option, because it's a stiff course. The students have to write a 10,000 word dissertation on an aspect of the book that preferably hasn't been studied before. But using the computer means that the number of aspects is almost infinite."

"The students on the course frequently get very wrapped up in it — I've heard frustrated tutors in the history department complain of hearing so much from the students about their Doomsday book dissertations. But in the four years that the course has run, there's always been at least one first class degree from someone who chose the Doomsday book as a final year option."

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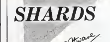
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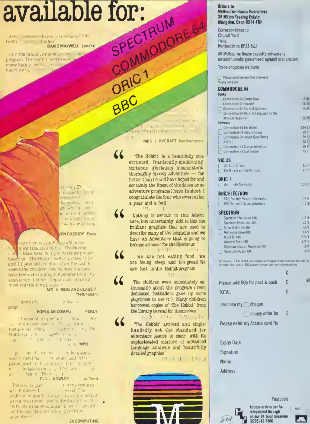
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Reviews

Bigger and hungrier

Program Ossie **Micro** BBC B **Price** £6.95 **Supplier** Peaksoft, 7 Hawthorn Crescent, Burton on-Trent

After peculiar penguins and unlikely invading firebirds here comes Peaksoft with *Ossie* based on the natural problems an Osprey has keeping its chicks fed and fighting off poachers

The program draws a lake in the mountains with a nest on a lone tree The bird you control has to dive into the lake to catch fish for its chicks Every now and then it has to swoop on poachers and drive them off There's no relaxation — it has to feed the chicks within a strict time-limit With each new sheet the chicks grow bigger and hungrier and time is shorter Diving into the lake is a tricky business of co-ordination to catch a fish rather than just get wet

The graphics are good but Ossie does not stand out very clearly (perhaps a deliberate tribute to its natural camouflage) The splash is a realistic sound effect and comes with enough of a delay after each dive to persuade you that you're a thoughtful naturalist watching from a rocky crag some distance away

Dave Walterson

Elementary!

Program *Dr Watson Series — BBC Assembly Language Course* **Price** £12.50 **Micro** BBC B **Supplier** Honeyfold Software Ltd Standfast House Bath Place Barnet London

As with any language — French German, BASIC etc — there's no instant short cut to learning Assembly Language (or Assembler as it's often known) Good teachers however do make the task much easier Tom de Havas and Peter Holmes are very good teachers A couple of years ago the Doctor Watson series of books introduced Assembler tutors for the Pet and the Vic Now they have revised and rewritten those for the BBC

What you buy is essentially 156 pages of first-rate lessons backed up by 47 pages of appendices a glossary, index and a cassette The lessons are by far the best I've seen At first they use ordinary decimal numbers, make comparisons with Basic and use very short programs to demonstrate each new concept As you learn you can see the *purpose* of each command Right from the start you begin to realise how you could use these instructions for a practical purpose in your own programs

Very sensible use is made of boxes round new terms and their meaning Simple flow charts and diagrams are used where they help

The cassette with the pack is probably not essential to your learning It offers a full disassembler to allow study of other people's programs, a couple of exercises to help you master the rote learning part of binary and hexadecimal numbering systems

The authors say they tried the book out on a novice who soon let them know where more explanation was needed The result is excellent, much better than most other introductory books and articles on the subject and very highly recommended

Dave Walterson

A rare gem

Program *The Storyline* **Micro** BBC B **Price** £7.95 **Supplier** Daco Software, 59 Mackenzie Road Moseley, Birmingham B11 4LP

Here's a happy exception to the rule that educational programs often become useless at home without a skilled teacher to oversee their use

With *The Storyline* children aged between 5 and 12 can write short stories of their own in large letters on screen and print them out to a printer

The program offers a continuous selection of words and you press a key to choose which to incorporate next into the story It is simplicity itself to operate and well crash-proofed The child is gently forced to use adjectives, adverbs and verbs in all the right places Learning new words involves first recognising them in reading material and then, crucially, being able to use them in your own writing *The Storyline* is that rare gem, a learning aid which helps the second process

Parents are encouraged to modify the data lines to introduce new vocabulary — guided by straightforward, brief but detailed and helpful notes Aunts and uncles should be ready to receive lots of simple but fun stories from excited youngsters who will really enjoy this unusual program

Simon Wilson

Black bugs

Program *Screwball* **Price** £0.00 **Micro** BBC 32K **Supplier** MRM Software 17 Cross Coates Road, Grimsby South Humberside

Screwball is MRM's latest addition in the *Q Man*, *Q-Man's Brother* family of games Whilst the concept behind these games is one of the more entertaining, and no doubt successful, to date, I imagine that it can t be long before the market for such similar offerings is saturated as the demand for something different grows

That said, however, I find *Screwball* the most enjoyable and interesting of the trio, not entirely surprising considering that it is a development and direct descendant of the other two

As with the previous variants, the object of the game is to move the Screwball character about the screen changing the colour of squares it lands on as it goes and avoiding the Black Bugs which are in hot pursuit

Screwball is slightly more complex in that as the game progresses, the screens become more complicated and Screwball's movements are restricted as sections disappear Similarly, holes which the Screwball frantically drills in order to destroy the Black Bugs can also trap him and lead to his own downfall if he is not careful

Typically, MRM's use of graphics and sound are both bold and pleasing but originality is somewhat lacking in this offering You can add one to the 'star rating' if you haven t played a similar game before

Simon Wilson

Instant squares

Program *Electro Art* **Micro** Electron **Price** £0.00 **Supplier** Quicksilva, Palmerston Park House 13 Palmerston Road, Southampton

Any computer program which allows you to draw or paint pictures on screen must be easy to use

With Quicksilva's *Electro Art* there are so many facilities or effects available that I had to keep referring to the explanatory booklet as I attempted to draw even a simple picture

After loading you are asked for the colour of your background and then the colour of your first ink (all sixteen colours of Mode 2) After this, colour changes are very simple, but the string of options available is daunting You can choose to move invisibly, draw instant squares, rectangles, four different triangles, horizontal or vertical lines fill in your own shapes, draw/paint true/abstract circles of any size or draw lines in any direction

Having begun a picture or finished a screen you need to be able to save it to either improve upon at a later date With Electro-Art couldn't be easier However, in order to re-load a picture the whole program must first be loaded first I tried the three free example pictures which are supplied and whilst I found them fascinating — way beyond my capabilities — I was a little impatient at the slowness, not only to load the initial program but also the long wait for the picture to build up on the screen

Electro-Art is a fascinating program for anyone who wants to try drawing using a computer It offers every facility to allow you to do this — all that it doesn't provide is the artistic ability that must come from you

Fred Short

Profit and lass

Program *The Chocolate Factory* **Price** £6.95 **Micro** Dragon **Supplier** Minits Strand House, Great West Road, Brentford Middx

This is a business simulation game for two to six players which should appeal to all those who enjoy trying to outfox their competitors and has arguably the added advantage of teaching some basic business finance painlessly It is aimed at adults and older children The object of the game is to increase the net worth of your company and to finish ahead of the competition The game is played in business periods and the number of periods to be played and thus the length of the game is decided at the start

Each player starts with a factory with a known capacity and a sum of money There are a series of decisions to be made within each period They include number of staff, whether to include extra vans or capacity how much to manufacture, and the selling price There is information as to the effect these decisions may have and also a market prediction Once all players have made their selections and time presses, the results of the simulated trade appear on the screen for each player in the form of profit and loss account balance sheet and some comments on the reasons for the results (eg "you did not have enough vans") To make the game more difficult various extras can be added, including strikes, heat waves and high inflation

The only problem with the screen display is that the players' business decisions appear on the screen as they are input This means that some means has to be devised to keep that data from the other competitors

For those who like to play strategic games where the object is to out think others and take calculated risks this has enough variety to hold the interest for quite a while Since it depends on knowing how the other business will react and outsmarting him (or her), having different options, differing numbers of periods or of course different opponents keeps the challenge going

Derrick Trueman

Brick lane

Program *Eric and the Floaters* **Micro** 16/48K Spectrum **Price** £5.95 **Supplier** Sinclair Research, Standhope Road, Camberley, Surrey

It is difficult to know exactly what to say about a game when you have the feeling that, despite several enjoyable hours, you still haven't played it properly The problem is that Sinclair, in their wisdom, have made sure that *Eric and the Floaters* is only compatible with their own interface To be blunt this is selfish and short sighted But now to the game

Hidden below the remains of a ruined civilisation Eric has chanced upon the dangerous mazes of the Brick Lanes

Armed only with time bombs Eric must defeat the lane's pulsating guardians the Floaters, collecting a time bonus and moving to the next screen, where a greater number of Floaters awaits The time bombs are short-fused so Eric must ensure that he gets well out of the way of his own bombs These explosions will also break down the maze

Although there is only one skill level the game has twenty stages which will maintain the challenge, no matter how good you get However, with an uncomfortable choice of control keys no redefine facility I didn't do too well It seems a shame that Sinclair has thus restricted what is otherwise a perfectly good game

Gordon Sneddon

Balanced learning

Program *Science I* **Micro** Electron **Price** £0.00 **Supplier** Shards Software Suite G, Roycraft House, 15 Luton Road Barking Essex

Shard's *Science* for the Electron offers aspects of basic science for 11 to 16 year olds, covering balances, meters and light

Shard describes its program as fun-to-learn and, if using a computer to learn physical concepts is fun, then I would tend to agree However I think any attempt to translate the physical world (especially of science) into what is fundamentally an animated text book, runs the risk of adverse criticism To me science is to do with apparatus and learning by experimentation with the necessary tools/equipment necessary to prove/disprove a theory

Having said that, I must now appear to contradict myself and state that this collection of programs would be very valuable to a science student who either hasn't grasped the concept during his lesson or who needs very good, well thought out animated revision which he can use alongside the actual apparatus itself

Each program offers various degrees of complexity both in example and questions about the concept being explained So for the student who needs to grasp the fundamentals of balances, meters or lenses this series of programs by Shards is a must

Fred Short

Lapped

Program *Stock Car* **Price** £7 95 **Micro** BBC B **Supplier** Micro Power, 8/8a Regent Street, Chapel Allerton, Leeds LS7 4PE

This car race game for the BBC is of the type where you are presented with an aerial view of the race circuit, one of the six different circuits which can be selected in *Stock Car*, as opposed to the alternative drivers' level view

The options include choosing the degree of skidding (u St) is an interesting enhancement to a relatively standard game In addition, the player(s) can select whether or not oil patches are present on the track and set the game in the number of laps

One point in the game's favour is that it does provide one of the relatively limited number of two-player games available, its addition to your software collection may prevent 'non-participant' observers becoming totally bored whilst you (the expert) demonstrate your latest purchase

As well as the players cars the computer controls two yellow cars (three in the case of a one player game) Players may use either keyboard or joysticks to steer the car and move up and down through four games, skill at which is essential in order to maximise acceleration (especially after a crash) and to outmanoeuver the rivals

The principal deficiency of the game, in my opinion, lies in its relatively unsophisticated graphics content Better use of sound could have been made, perhaps motor and gear change noises as opposed to the game's rather unimaginative arcade jingles

Simon Wilson

First impressions

Program *Photon Disassembler* **Micro** *Spectrum 48K* **Price** *£10 85* **Supplier** *Eigen Software*

There are now getting on for a dozen assembler/disassembler programs being sold for the Spectrum Three, in particular, are especially good — *Devpack*, *Zeus* by Sinclair and the Picturesque package I use the latter, and am so pleased with it that any new program needs to be really good to make a favourable impression

Sorry, Eigen, but *Photon* is not excellent

First impressions are, in my experience, all-important in making one's mind up about something In this case, my first view of the program was of a very cheaply packaged cassette, with a text book-like manual I tediously read this, while loading the program to discover what to do next and the leaflet which makes up the manual was of no help, either

After experimenting (pressing every conceivable combination of keys until something happens!) I found out that pressing the h key tells the computer to expect a hex number The going was extremely tough but I eventually worked out what to do and after giving it some machine code to disassemble, I thought (hoped?) that I had passed the worst

But this was not to be It seems to me that this disassembler does not actually disassemble It made no attempt to digest my code, anyway It is of course possible that I was doing something wrong — I certainly don t rule out the possibility But I followed the instructions, and so I cannot see any customers faring any better than I did

As there are already three disassemblers on sale which I like, can and do use and all for rather less than the £10 85 asking price for this, I feel compelled to advise you to save your money, and go for the cheaper packages already on sale, which appear to be infinitely better value

David Lester

Nailbiting tension

Program *Orc Attack* **Micro** Atari **Price** £9 95 **Supplier** Thorn-EMI retail

Thorn-EMI entered the games software scene some months ago with a wide selection of Atari programs They featured excellent packaging, but with prices up to £30 00, represented appalling value and consequently didn't sell too well Some of them have now been repackaged and repriced under a new label — Creative Sparks

Orc Attack is a good arcade game, and comes as a cartridge The game mechanics are pretty simple — you control a little Norman-like soldier who has to defend the Castle battlements from the attacks of waves of mean Orcs

Being Norman, he has the wisdom (sorry, about that!) to have a never ending supply of various weapons to hand Rocks, swords and boiling oil may all be pressed into service as the little Orcs rush about with scaling ladders The game has the right amount of nailbiting tension and mounting complexity Very addictive, with good sound and graphic graphics — watch the Orcs burning in the oil, or your head tumbling over the battlements!

Tony Bridge

Queen takes pawn

Program *Death Chess 5000* **Micro** 48K Spectrum **Price** £6 95 **Supplier** Artic, Main Street, Brandesburton, Driffield, Yorks Y025 8RL

Karpov would never believe it. Queen takes Pawn never meant so much Artic here attempted with *Death Chess* to extend the bounds of traditional chess by making each capture into a game of arcade fun and wizardry Well, I did say attempt

When you decide that P x P looks like a good move the screen display fades (quite nicely) into an alien terrain where your battle tank must run the gauntlet of not very fierce helicopter attacks to reach a distant city This screen is almost impossible to lose B x B — escape from a maze filled with vagrant skulls R x R — dodge falling barrels And so on and so forth These screeens are graphically interesting and adept, though extremely low on entertainment value

And what happens when you get back to the board? Well, in finding that you have lost your Queen to the Spectrum s Pawn which can happen all too easily and often, you realise that to win you must dispense with every piece of chess strategy you ever learnt For while the computer is still playing chess, logic has left To win? Just keep advancing pawns, one is bound to get to the King

Quite simply, the 'chess' is not chess, and if you want good and varied arcade action, then there are better places to find it than here The program is technically accomplished and impressive, but the effect is rather dull

Gordon Sneddon

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Key to the puzzle

Alan Mcdonald begins a five part series of articles showing how to write machine-coda adventure games

Over the next few issues I shall try to explain how to write a machine-code adventure game for the ZX-Spectrum Owners of other Z80-based computers may also find the articles of use in their adventure writing

The best way to explain how to write an adventure game is to actually design and code one If you have some knowledge of Z80 machine code then it will be useful

We only have five weeks, so it will have to be a small one, but the principles are true for a full-blown adventure

One of the most famous adventures is *Colossal Caves* Our 'mini *PCW* adventure will be based around the first few puzzles found in the adventure

You start off near a small brick building Once inside there is a set of rusty keys a torch, a small pool of water and an empty bottle The only thing of use in our adventure will be the keys although you can still fill the bottle and turn on the torch Eventually you make your way to a grating which is locked — obviously you will unlock it with the keys and then go through Once inside the caves you wander around until you find a small wickerwork cage and a black rod Further on, you come across a singing bird You must try to catch it, however something is scaring it off The black rod You drop the rod and catch the bird You go deeper into the caves where you find the famous green snake You release the bird from the cage The bird kills the snake before flying off The short adventure ends here but of course your own adventure can be carried on more or less for as long as you wish

Here is a map to clarify the layout.

The map shows the positions of the objects in the adventure Any adventure is just a special type of database and broadly speaking there are three types of data which need to be stored

a) Locations — a description of each location plus the direction data — exits and so on

b) Objects — Including their location and movement.

c) Messages — what the adventure tells you

Locations

Each location allows the player to move to and from it, eg

Going east from outside the building takes you inside it Going south, however, takes you to the valley Notice how each location has a unique number attached to it The following is a list of all the locations and their numbers

Number Location

1 You are standing before a huge brick building
2 You are inside the brick building
3 You are in a steep sided valley
4 You are beside a fast flowing stream The water flows into a 2-inch channel
5 You are in a 20 foot depression
6 You are walking on a finely cobbled pathway leading E W
7 You are in lowering e-w canyon
8 You are in The Bird Chamber
9 You are in The Hallway of the Mountain King
10 You are on a dark rickety staircase
11 You are in a small chamber
12 You are in an open forest.

Therefore locaton 7 is e-w canyon. If we go east from 1 we end up in 2 If we go south from 1 we end up in 3 And so on

In our adventure there are six possible directions north, south, east, west, up and down The computer must have 6 bytes of data to tell if it is possible to move in a given direction And if movement is possible then it must know where the player will end up The 6 bytes of data for Location 1 would be 0 3,2,0,0 0 which tells the computer

North = 0 Can t go north,
South = 3 End up in the valley (Location 3)
East = 2 End up inside the building (Location 2)
West = 0 Can t go west,
Up = 0 Can t go up
Down = 0 Can t go down

This information is stored in memory using the following format. Location, Separator,n s,e w,u d

The separator is '255 so that the computer knows when it has reached the end of the description

In Assembler format Location 1 would be represented by

DEFM "You are standing before a huge brick building", 225 0 3,2,0 0 0

The first part of the Location database must start as

LOCATE DEFB 255 0 0 0,0,0
label separator 6 null bytes (n e s u d)

Take a look at the Assembler listing to see the location database for yourself

Objects

There are 14 objects shown in the following table

Number	Object	LOC	EXE
1	Rusty set of keys	2	0
2	Torch which is on	2	3
3	Torch which is off	2	0
4	Empty bottle	2	0
5	Bottle of water	2	3
6	Greenish pool of water	2	2
7	Locked grating	5	2
8	Open grating	5	3
9	Small wicker-work basket	6	0
10	Black rod	7	0
11	Small singing bird	8	2
12	Small bird in wickerwork cage	8	3
13	Vicious green snake	9	2
14	Dead snake	9	3

Notice how two numbers precede each object The first tells us what location the object is at eg, the snake is at location 9, and the second tells us if the object does or doesn t exist The existence codes are as follows 0 = Object is visible and can be picked up, 1 = the player is carrying the object, 2 = object is visible but can't be taken, 3 = the object does not yet exist, or no longer exists 4 = the object is being worn (Not applicable in this adventure)

As an example, in the *PCW* adventure

there is a torch Two objects are used to represent it — a torch which is on and a torch which is off Since they both can't exist at the same time one of them is always at Existence 3

The object data is stored as follows

```
OBJECT DEFB 255 , separator
       DEFM "object"
       DEFB 255 , separator
       DEFM "object"
```

and so on

Take another look at the Assembler listing, to see how all the objects are stored The existence and location data of each object is stored separately

Messages

The message table holds a list of words used in the adventure, eg *Ok*., *I don't understand, You turn the torch off* are all messages. They are stored in the same way as the objects

```
MTABLE DEFB 255  separator
       DEFM "message"
       DEFB 255 , separator
       DEFM "message"
```

Again refer to the assembler listing

Like any other program there are variables If you study the assembler listing carefully you will find a short list of them The only variables which are important to use at the moment are these

```
X    DEFB 1    location the player is currently at.
NOR  DEFB 0
TSOU DEFB 0
EAS  DEFB 0
WES  DEFB 0
UP   DEFB 0
DOW  DEFB 0    ,number of objects being carried
INV  DEFB 0     locations of objects 14 objects
               = 14bytes
LOC  DEFS 14    existence of objects
```

When the program is first run the variables will need to be set up When a new game is started all of the variables have changed and therefore we will need to store a permanent copy of the variables somewhere else Each time the program is started they can then be copied into their correct positions

```
BUFF DEFB 1,0 0 0 0,0 0 0 0   X to INV
     DEFB 2 2 2 2 2 2 5 5 6 7 8,8 9 9,   LOC
     DEFB 0 3 0 0 3 2,2,3 0 0,2,3,2,3   EXE
     (length of buffer = 36)
```

As mentioned earlier the location and existence data for each object is stored separately to make accessing the data easier Imagine that we want to find out the existence of Object 13 (vicious green snake) We can make HL point to it then store its value into the A register ie

```
LD HL, EXE+12     HL = the 13th object
LD A (HL)         store it into A.
```

The A register now holds the existence of the green snake You may be wondering why it s LD HL,EXE+12 and not 13. This is because we start from 0-EXE+0 = the keys EXE+1 = the torch which is off, and EXE+12 = the green snake

This then is the rough form of the *PCW* adventure Next week we ll deal with printing information to the screen

```
        ORG  55000
;
; Setup adventure:
;
START   LD   HL,BUFF0
        LD   DE,X
        LD   BC,36
        LDIR
        LD   A,2
        CALL #1601
        LD   A,1
        LD   (23562),A
        JP   FLOC
;
;
; Database and variables:
;
; Object database:
;
OBJECT  DEFB 255
        DEFM "A rusty set of keys"
        DEFB 255
        DEFM "A torch which is on"
        DEFB 255
        DEFM "A torch which is off."
        DEFB 255
        DEFM "An empty bottle."
        DEFB 255
        DEFM "A bottle of water "
        DEFB 255
        DEFM "A pool of water "
        DEFB 255
        DEFM "A locked grate "
        DEFB 255
        DEFM "An open grate."
        DEFB 255
        DEFM "A small wicker cage"
        DEFB 255
        DEFM "A black rod "
        DEFB 255
        DEFM "A small singing bird "
        DEFB 255
        DEFM "A small bird in a wicker cage."
        DEFB 255
        DEFM "A vicious green snake."
        DEFB 255
        DEFM "A green snake "
        DEFB 255
;
;
; Location database:
;
;
LOCATS  DEFB 255,0,0,0,0,0,0
        DEFM "You are standing before a large brick building."
        DEFB 255,0,0,2,0,0,3
        DEFM "You are inside the brick building."
        DEFB 255,0,0,0,1,0,0
        DEFM "You are in a large valley."
        DEFB 255,1,4,0,0,1,4
        DEFM "You are beside a stream. The water flows into a"
        DEFM " 2-inch slot."
        DEFB 255,3,5,0,0,0,5
        DEFM "You are in a 20-foot depression."
        DEFB 255,4,0,12,0,4,0
        DEFM "You are walking on a cobbled pathway leading e-w."
        DEFB 255,0,0,11,7,0,0
        DEFM "You are in a large e-w cannon."
        DEFB 255,0,8,6,0,8,8
        DEFM "You are in the bird chamber."
        DEFB 255,0,10,7,0,0,10
        DEFM "You are in the Hallway of the Mountain King."
        DEFB 255,10,0,0,0,1,0,0
        DEFM "You are on a dark staircase."
        DEFB 255,0,0,0,0,0,9
        DEFM "You are in a small chamber."
        DEFB 255,0,6,0,6,5,0
        DEFM "You are in an open forest."
        DEFB 255,0,0,4,12,12,12
;
;
; Message database:
;
MTABLE  DEFB 255
        DEFM "Ok ."
        DEFB 255
        DEFM "You can't do that."
        DEFB 255
        DEFM "You can also see..."
        DEFB 255
        DEFM "Nothing."
        DEFB 255
        DEFM "What now ?"
        DEFB 255
        DEFM "I don't understand."
        DEFB 255
        DEFM "You can't go in that direction."
        DEFB 255
        DEFM "You can't take that "
        DEFB 255
        DEFM "You can't drop that."
        DEFB 255
        DEFM "You can't carry anymore."
        DEFB 255
        DEFM "How about another game ?"
        DEFB 255
        DEFM "Press record, then hit a key "
        DEFB 255
        DEFM "Press play, then hit a key "
        DEFB 255
        DEFM "You are carrying nothing."
        DEFB 255
        DEFM "You are carrying.."
        DEFB 255
        DEFM "With you."
        DEFB 255
        DEFM "You take ."
        DEFB 255
        DEFM "You drop. "
        DEFB 255
        DEFM "You don't have it."
        DEFB 255
        DEFM "It's already on."
        DEFB 255
        DEFM "It's already off."
        DEFB 255
        DEFM "You turn the torch on."
        DEFB 255
        DEFM "You turn the torch off "
        DEFB 255
        DEFM "It's already full !"
        DEFB 255
        DEFM "It already is "
        DEFB 255
        DEFM "How about some keys first ?"
        DEFB 255
        DEFM "It is !"
        DEFB 255
        DEFM "Something is scaring the bird "
        DEFB 255
        DEFM "You catch the bird  but it flies off "
        DEFB 255
        DEFM "You release the bird  It kills the snake. "
        DEFM "before flying off "
        DEFB 255
;
;
; Variables:
;
;
ADD     DEFB 0
WT      DEFB 0
FLAG    DEFB 0
SYS     DEFB 0
X       DEFB 1
NOR     DEFB 0
SOU     DEFB 0
EAS     DEFB 0
WES     DEFB 0
UP      DEFB 0
DOW     DEFB 0
INV     DEFB 0
LOC     DEFS 14
EXE     DEFS 14
BUFF0   DEFB 1,0,0,0,0,0,0,0,0,2,2,2,2,2,2,5,5,6,7,8,8,9,9
        DEFB 0,3,0,0,3,2,2,3,0,0,2,3,2,3
TEMP    DEFB 0
```

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One file at a time

***Malcolm Bryant** demonstrates a file copy program for the QL*

This program will copy the entire contents of one microdrive cartridge onto another. The *Clone* programs supplied with the QL only copy the Psion software cartridges and are not general-purpose utilities

The QL manuals specifically recommend that microdrive cartridges are backed-up frequently This file copy program can prevent the tedious business of typing in a separate *Copy* command for each file on the cartridge The user has the option of copying the whole cartridge in one operation, or of being prompted by the program for one file at a time

The file copy program works by sending a directory listing to a special temporary file on the destination microdrive This file is subsequently read back and the information is used for the copying process Finally, the temporary file is then deleted and the contents of the 'destination cartridge are listed on the screen

Note that the symbols printed in the listing as £ signs should be typed in as hash (#) marks

```
100 CLS:PRINT"File copy program"
110 PRINT"-----------------"
120 REPeat drv
130 INPUT"Which drive are you copying from? ";d:IF d=1 OR d=2 THEN EXIT drv
140 END REPeat drv
150 s$=d:t$=3-d
160 PRINT"Press ENTER to copy everything or anyother key to copy individual files"
170 e=CODE(INKEY$(-1))
180 PRINT"Accessing microdrive"
190 n$="mdv"&t$&"_temp"
200 OPEN_NEW £5,n$
210 DIR £5,"mdv"&s$&"_"
220 CLOSE £5
230 OPEN £5,n$
240 INPUT £5;a$;a$;
250 REPeat loop
260 INPUT £5;a$;
270 f=10
280 IF NOT e=10 THEN
290 PRINT"Press ENTER to copv file ";a$
300 f=CODE(INKEY$(-1))
310 END IF
320 IF f=10 THEN
330 PRINT"Copying ";a$
340 COPY "mdv"&s$&"_"&a$ TO "mdv"&t$&"_"&a$
350 ELSE
360 PRINT"File ";a$;" not copied"
370 END IF
380 IF EOF(£5) THEN
390 CLOSE £5:DELETE n$
400 DIR "mdv"&t$&"_":EXIT loop
410 END IF
420 END REPeat loop
```

Speed limit

Peter Whittaker *shows you how to make use of the Dragon Rom's RTS instruction in your own programs*

This week we use the same system as last week to create a *List* formatting routine and a List speed control.

Assembler 4 (or Basic #2) is a *List* formatting routine. When a *Listed* program line is longer than 75 characters the start of the second, third and fourth lines are indented by four spaces. This means that the line numbers stand out to the left of the rest of the program and are subsequently easier to find. To use this on a narrower printer *Poke* the desired line length to location &H7D22 (eg between 10 and 79). Assembler 5 (or Basic #3) is a LIST speed control routine. When enabled the speed of *Listing* is increased by pressing the *Enter* key and slowed by pressing the *Clear* key. The list can still be paused by pressing the *Shift* and '@' keys together.

Program Notes

PSHS X,D CC	The relevant registers are saved (D = A & B)
PULS X,D CC	Restore registers so that the computer will carry on undisturbed
JSR #800F	Sends character in 'A' register to printer
JSR #8006	Gets character from keyboard into 'A' register
JSR 37093	Prints from 'X' register +1 until a 0
JMP 33649	Return to Basic
Location 111	Contains the device number (0=screen 2=printer)
Location #9C	Contains printer head position

To save these routines as machinecode Csavem "routine" 32000 32130 358 Csavem "vector" 359 361 359. Before reloading Clear200 32000.

ASSEMBLER 4. LLIST FORMAT.

```
[illegible]
```

BASIC #2. LLIST FORMAT.

```
10 CLEAR 200 32000
20 FOR A=32001 TO 32130
30 READ B POKE A B
40 NEXT A
50 POKE 361 1:POKE 360,125 POKE [illegible] 126
60 STOP
100 DATA 52 , 23  182  0 , 111  129
254  39  7  129 , 0 , 39  48 , 53
[illegible] , 57 , 246 , 125 , 130 , 129 , 0  39
246  129  [illegible]  32 , 240 ,
162 , 0  156  129  79  17  [illegible]
134  [illegible]  189  128  15  134  32  4
110 DATA 4  189  128 , 15  [illegible] ,
250  22 , 216 , 53  23  52 , 23 , 129
43  36  208  53  23  182 , 125 ,
130  129  0 , [illegible]  127  [illegible]  1
30 , 142  125  112  189  144  [illegible]
126  131  113  124 , 125 , 130 , 142
125
120 DATA 95  189  144  229  126  131
113  32  76  76 , 73 , 83 , 84 ,
32  70  79  82 , 77  65  84  32 , 79
78  0  32  76  76  73  83  8
4 , 32  70  79  82  77  65  [illegible]  32
79  70  70  0  0
```

BASIC #3. LIST SPEED CONTROL.

```
10 CLEAR 200 32000
20 FOR A=32001 TO 32130
30 READ B:POKE A B
40 NEXT A
50 POKE 361 1 POKE 360,125 POKE [illegible] 126
60 STOP
100 DATA 52  23 , 246 , 0 , 111 , 193  0
38  43 , 129  93  39  42  182
, 125 , 130 , 129  0  [illegible]  32  189
128  6  129  13 , 39  6  129  12 ,
39  7  32  8  172  125  43  32  3
124  125 , 43 , 142 , 11 , 48
110 DATA 48  136 , 156 , 140  0  0 , 36
, 248  53  23  57  53  23  182
, 125 , 130 , 129  0  39 , [illegible]  125
130  142  125  112 , 189  144
229  126  131  113  124 , 125 , 130
142 , 117  48  191  125 , 43 , 142  125
120 DATA 95 , 189 , 144  229 , 126 , 131 ,
113 , 32 , 76 , 73  83 , 84  32
67 , 79 , 78  84  82  79  [illegible]  32  79
[illegible]  0  32  76 , 73 , 83 , 84 , 3
67  79 , 78  84  82 , 79  [illegible] , 32  79
70  70  [illegible]  0
```

ASSEMBLER 5. LIST SPEED CONTROL.

```
7D01
7D01 3417
7D03 FE006F
7D06 C100
7D08 2628
7D0A 913D
7D0C 272A
7D0E 067DA2
7D11 8100
7D13 2720
7D15 BD8006
7D18 810D
7D1A 2706
7D1C 810C
7D1F 2707
7D20 2008
7D22 7A7D28
7D25 2003
7D27 7C7D28
7D2A 8EA8BA
7D2D 30889C
7D30 AC0000
7D33 26F8

7D35 3517
7D37 39
7D3A 3517
7D3A 867D82
7D3D 8100
7D3F 270C
7D41 7F7D82
7D44 8E7D70
7D47 BD90E5
7D4A 7E0371
7D4D 7C7D82
7D50 8E7530
7D53 BF7D28
7D56 8E7D5F
7D59 BD90E5
7D5C 7E0371
7D5F 204C49535420434F
7D70 204C49535420434F
7D82 00
0167
0167 7E7D01
016A
10050      PRT

10010 @START  PSHS    D CC
10010      LDB  111
10010      CMPA  #0
10010      BNE  @RETURN
10010      CMPA  #93
10010      BEQ  @TOGGLE
10010      LDA  @TOGG
10010      CMPA  #0
10010      BEQ  @RETURN
10010      JSR  #8006
10010      CMPA  #13
10010      BEQ  @FAST
10010      CMPA  #12
10010      BEQ  @SLOW
10010      BRA  @DELAY
10020 @FAST  DEC  @DELAY+1
10020      BRA  @DELAY
10020 @SLOW  INC  @DELAY+1
10020 @DELAY  LDX  #3000
10020 @LOOP1  LEAX  -100
10020      CMPX  #0
10020      BNE  @LOOP1
10020 @RETURN  PULS  Y D CC

10020      RTS
10030 @TOGGLE  PUL[illegible]
10030      LDA  @TOGG
10030      CMPA  #0
10030      BEQ  @SET
10030      CLR  @TOGG
10030      LDX  #@TCLR
10030      JSR  37093
10030      JMP  33649
10030 @SET  INC  @TOGG
10030      LDD  #3000
10030      ST[illegible]
10030      LDX  #@TSET
10030      JSR  37093
10030      JMP  33649
10040 @TSET  FCC  LIST
           CONTROL ON" 0
10040 @TCLR  FCC  [illegible]
           CONTROL OFF" 0
10040 @TOGG  FCB  0
10050      ORG  359
10050      JMP  @START
10050      END  @START
```


From

GILSOFT

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THE QUILL

ADVENTURE [illegible]

[illegible]

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AND

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[illegible] AVAILABLE FROM [illegible]

[illegible]

[illegible]





GILSOFT

[illegible]

[illegible] Card Order Line 24 hour service [illegible]

Searching completed

Neil Barnes concludes his multi-purpose facility program

This is the last part of a file program designed to make use of Mode 7 BBC graphics

Procedures	Function
PROCmenu	Displays menu on screen
PROCtitle (TS H)	Prints title in double height TS — text to be printed H — X position of text
PROCdecide	Decides which option has been chosen
PROCnewfile	Allows a new file to be created
PROCgetdata	Inputs data from user
PROCadd	Allows extra items to be added
PROCverify	Allows the file to be verified
PROCdump	Dumps file to printer
PROCsort	Sorts the file
PROCsearch	Searches for an item in file
PROClist	Allows the user to view the file
PROCend	Ends the program

```
2220 DEFPROCsearch
2230 REM Search for the inputted string
2240 PROCtitle("SEARCHING FOR AN ITEM IN FILE',2)
2250 VDU31,0,5,133:PRINT'This option will search for every
2260 VDU133:PRINT ocurance of the inputted item '
2270 PRINT
2280 VDU134:PRINT It will also show the item if it is a
2290 VDU134:PRINT part of another item."
2300 PRINT
2310 PRINT  e.g    It will find  FRED in  JOHN FRED SMITH ."
2320 PRINT
2330 VDU131:PRINT This function is especially useful in"
2340 VDU131:PRINT'conjunction with the other options.'
2350 PRINT
2360 VDU174:PRINT Please input the string you want the"
2370 VDU174:PRINT computer to search for."
2380 PRINT
2390 VDU31,0,20,129:PRINT'Search string:'
2400 PRINTTAB(15,20)STRING$(25,  )
2410 INPUTTAB(15,20)V$
2420 IF LEN(V$) 1 OR LEN(V$)>15 THEN SOUND1,-15,200,2:GOTO 2390
2430 VDU31,5,22:PRINT"Press SPACE BAR to continue":REPEAT UNTIL GET=32
2440 PROCtitle('SEARCHING FOR AN ITEM IN FILE",2)
2450 VDU31,3,5,134:PRINT"Searching for:';V$
2460 VDU31,10,12,132:PRINT"*** Searching ***"
2470 flag1=0
2480 FOR G=1 TO AI
2490 H$=file$(G)
2500 IF LEN(H$) LEN(V$) THEN 2550
2510 FOR K=1 TO (LEN(H$) LEN(V$))
2520 E$=MID$(H$,K,LEN(V$))
2530 IF V$=E$ THEN flag1=1:PRINTTAB(0,15)"Item number"; ' "G;'.':  ';file$(G):PRINTTAB(5,22) PRESS SPACE BAR TO CONTINUE":SOUND1,-15,180,1:REPEAT UNTIL GET=32
2540 NEXT K
2550 NEXT G
2560 VDU31,4,12,133:PRINT'*** Searching completed ***"
2570 PRINTTAB(0,15)SPC(40)
2580 SOUND1,-15,200,2
2590 IF flag1=0 THEN PRINTTAB(9,15)"*** NONE FOUND ***':PRINTTAB(5,22)"PRESS SPACE BAR TO CONTINUE":REPEAT UNTIL GET=32:PROCmenu
2600 REPEAT UNTILGET=32
2610 PROCmenu
2620 ENDPROC
2630 DEFPROClist
2640 REM List file
2650 PROCtitle('LISTING THE FILE",8)
2660 VDU31,0,5,134:PRINT"This option enables the user to view"
2670 VDU134:PRINT"the file that he/she has created.'
2680 PRINT
2690 VDU131:PRINT'Do you want to view the complete'
2700 VDU131:PRINT'file?"
2710 INPUTTAB(6,9)J$
2720 IF J$="Y' OR J$="y" THEN J=1:U=AI:GOTO2810
2730 IF J$="N" OR J$="n' THEN VDU31,0,11,129:PRINT'Which item number do you want to start
```

```
2740 VDU129:PRINT'from?'
2750 INPUTTAB(7,12)J
2760 IF J 1 OR J)AI OR J=AI THEN SOUND1,-15,220,1:PRINTTAB(7,12)SPC(3):GOTO27
0
2770 VDU31,0,14,129:PRINT"Which item number do you want to end"
2780 VDU129:PRINT at"'
2790 INPUTTAB(5,15)U
2800 IF U 1 OR U>AI OR U=J THEN SOUND1,-15,220,1:PRINTTAB(5,15)SPC(75):GOTO279
2810 VDU31,4,22,173:PRINT"Press SPACE BAR to view file':REPEAT UNTIL GET 32.PRO
Ctitle('VIEWING THE FILE ,7)
2820 PRINTTAB(5,5)'Press any key after each item"
2830 FOR R=J TO U
2840 PRINTTAB(0,0)"Item number ';' ";R;" ";file$(R)
2850 wait=GET
2860 PRINTTAB(0,8)SPC(40)
2870 SOUND1,-15,100,1
2880 NEXT
2890 PRINTTAB(5,5)'End of file press any key'SPC(4)
2900 D=GET
2910 PROCmenu
2920 ENDPROC
2930 DEFPROCend
2940 REM End program routine
2950 PROCtitle("END OF PROGRAM",8)
2960 INPUTTAB(0,5)'Do you want to leave the program" D$
2970 PRINTTAB(27,5)SPC(7):IF LEN(D$) 1 THEN SOUND1,-15,200,2:GOTO2960
2980 IF D$='Y' OR D$=', THEN END
2990 IF D$='N OR D$='n" THEN RUN
3000 SOUND1,-15,100,2:GOTO 2960
3010 ENDPROC
RUN
```

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Bits and pieces

Lee Tenner demonstrates a disassembler for CBM 64 with Simons Basic

DIS 64 is a disassembler for the Commodore 64 and Simons Basic. There are three commands available:
D To disassemble
P As for D but also output to printer.
X Exit to Basic
The D and P commands use the same syntax as the Basic command *List* eg, D2048 or D-200 or D60000 or D. There must be no spaces between the command letter and the first parameter.

The DATA statements must be typed in exactly as shown as the program uses the *Reset* command.

If you do not have a printer you can save a lot of typing by removing all the code relating to the printer operation, ie, remove every occurance of the code *If X$="P" THEN PRINT#1* etc which occurs in lines 22,26,34,37,40,42,43,44,46,48,50 and 52. Also remove the second statement from Line 54 and remove line 260.

Program notes

10–58 Read code from DATA and print
80–96 Convert Decimal numbers to Hex
100–280 Input command and verify
110 Error message
260 Open a channel to the printer
1000–1280 DATA for disassembly

```
1 REM ************************
2 REM *        DIS-64         *
3 REM * BY LEE TANNER  3/3/84 *
4 REM ************************
5 GOTO100
9
10 PROC DISS
20 D=AD EXEC CONVERT
22 PRINT" ",B$,"    ", IFX$="P"THENPRINT#1,"   B$ "
24 D=PEEK(AD) RESET INT(D/10)*10+1000
26 READC,C$,B IFINT(C/10)<INT(D/10)THENPRINT"???" IFX$="P"THENPRINT#1,"???"
27 IFINT(C/10)>INT(D/10)THEN54
28 IFC=DTHEN32
30 GOTO26
32 D$=RIGHT$(C$,1) IFD$>"0"ANDD$<"9"THENC$=LEFT$(C$,LEN(C$)-1)
34 PRINTC$, IFX$="P"THENPRINT#1,C$,
35 IFB=1THEN43
36 IFB=2THENAD=AD+1 D=PEEK(AD) EXEC CONVERT
37 IFB=2THENPRINTB$, IFX$="P"THENPRINT#1,B$,
38 IFB=2THEN43
39 IFB=3THENAD=AD+1 D=PEEK(AD) EXEC CONVERT
40 IFB=3THENPRINTB$, IFX$="P"THENPRINT#1,B$,
41 IFB=3THENAD=AD+1 D=PEEK(AD) EXEC CONVERT
42 IFB=3THENPRINTB$, IFX$="P"THENPRINT#1 B$,
43 IFD$="1"THENPRINT",X)" IFX$="P"THENPRINT#1,",X)"
44 IFD$="2"THENPRINT"),Y" IFX$="P"THENPRINT#1,"),Y"
46 IFD$="3"THENPRINT",X" IFX$="P"THENPRINT#1,",X"
48 IFD$="4"THENPRINT",Y" IFX$="P"THENPRINT#1,",Y"
50 IFD$="5"THENPRINT")" IFX$="P"THENPRINT#1,")"
51 IFD$>"0"ANDD$<"6"THEN54
52 PRINT IFX$="P"THENPRINT#1
54 AD=AD+1 IFAD>T ANDX$="P"THENCLOSE1
56 IFAD>TTHENEND PROC
58 GOTO20
79
80 PROC CONVERT
82 X(1)=INT(D/4096) Z=D-X(1)*4096
84 X(2)=INT(Z/256) Z=Z-X(2)*256
86 X(3)=INT(Z/16) X(4)=Z-X(3)*16
88 B$="" Z=1 IFX(1)=0ANDX(2)=0THENZ=3
90 FORY=ZTO4
92 IFX(Y)<10THENB$=B$+CHR$(X(Y)+48) ELSE B$=B$+CHR$(X(Y)+55)
94 NEXTY
96 END PROC
99
100 PRINT"" GOTO120
110 PRINT "COME AGAIN ?"
120 PRINT "", INPUTW$ X$=LEFT$(W$,1)
130 IFX$="X"THENPRINT"" END
140 IFX$<>"D"ANDX$<>"P"THEN110
150 P=2 F$="" T$=""
160 C$=MID$(W$,P,1) IFC$="-"THENP=P+1 GOTO200
170 IFC$=""THENT$=F$ GOTO230
180 IFC$<"0"ORC$>"9"THEN110
190 F$=F$+C$ P=P+1 GOTO160
200 C$=MID$(W$,P,1) IFC$=""THEN230
210 IFC$<"0"ORC$>"9"THEN110
220 T$=T$+C$ P=P+1 GOTO200
230 F=VAL(F$) T=VAL(T$) IFT=0THENT=65535
240 IFF<0ORF>65535ORT<0ORT>65535ORT<FTHEN110
250 PRINT"", AD=F
260 IFX$="P"THENOPEN1,4
270 EXEC DISS
280 GOTO120
999
1000 DATA0,BRK,1,1,ORA ($1,2,5,ORA $,2,6,ASL $,2,8,PHP,1,9,ORA #$ 2
1010 DATA10,ASL A,1,13,ORA $,3,14,ASL $,3,16,BPL #$ 2,17,ORA ($2,2
```

continued over the page

Commodore 64

```
1020 DATA21,ORA $3,2 22,ASL $3,2,24 CLC,1 25 ORA $4,3 29,ORA $3,3
1030 DATA30,ASL $3,3,32 JSR $,3,33,AND ($1,2,36 BIT $,2,37,AND $,2,38,ROL $,2
1040 DATA40,PLP,1,41,AND #$,2 42,ROL A,1,44,BIT $ 3,45,AND $,3,46,ROL $,3
1045 DATA48,BMI #$,2,49,AND ($2,2
1050 DATA53 AND $3,2,54,ROL $3,2,56,SEC 1,57,AND $4,3
1060 DATA61,AND $3,3,62,ROL $3,3,64,RTI 1,65,EOR ($1,2,69,EOR $,2
1070 DATA70,LSR $,2,72,PHA 1,73,EOR #$,2,74,LSR A,1,76,JMP $,3
1075 DATA77,EOR $ 3 78 LSR $,3
1080 DATA80 BVC #$,2,81,EOR ($2,2,85,EOR $3,2,86,LSR $3,2
1085 DATA88,CLI,1,89,EOR $4,3
1090 DATA93,EOR $3,3,94,LSR $3,3,96,RTS,1,97,ADC ($1,2
1100 DATA101,ADC $,2,102,ROR $,2,104,PLA,1,105,ADC #$,2
1105 DATA106,ROR A,1,108 JMP ($5,3 109,ADC $ 3
1110 DATA110 ROR $,3,112 BVC #$,2,113,ADC ($2 2 117,ADC $3,2,118,ROR $3,2
1120 DATA120,SEI,1,121,ADC $4,3 125 ADC $3,3,126,ROR $3,3,129,STA ($1,2
1130 DATA132,STY $,2,133 STA $,2,134,STX $ 2 136,DEY,1,138,TXA,1
1140 DATA140 STY $,3 141,STA $ 3,142 STX $,3,144,BCC #$,2,145,STA ($2,2
1145 DATA148,STY $3,2,149,STA $3 2
1150 DATA150,STX $4,2,152,TYA,1 153,STA $4,3,154,TXS,1,157,STA $3,3
1160 DATA160 LDY #$,2,161,LDA ($1,2 162,LDX #$,2,164,LDY $,2,165,LDA $,2
1165 DATA166,LDX $,2,168,TAY 1,169,LDA #$ 2
1170 DATA170,TAX,1,172,LDY $ 3,173,LDA $,3,174,LDX $,3,176,BCS #$,2
1175 DATA177,LDA ($2,2
1180 DATA180,LDY $3,2,181,LDA $3,2,182,LDX $4,2,184,CLV,1 185,LDA $4,3
1185 DATA186,TSX,1,188 LDY $3 3,189,LDA $3,3
1190 DATA190,LDX $4,3 192,CPY #$,2,193,CMP ($1,2,196,CPY $,2,197,CMP $,2
1195 DATA198,DEC $,2
1200 DATA200,INY 1 201,CMP #$ 2 202 DEX,1,204,CPY $,3,205,CMP $,3
1205 DATA206,DEC $,3,208,BNE #$ 2,209 CMP ($2,2
1210 DATA213,CMP $3 2,214 DEC $3,2,216,CLD,1,217,CMP $4,3
1220 DATA221 CMP $3,3,222 DEC $3,3,224,CPX #$,2,225 SBC ($1,2,228,CPX $,2
1225 DATA229,SBC $ 2
1230 DATA230,INC $ 2,232,INX,1 233,SBC #$,2,234,NOP,1,236,CPX $,3,237,SBC $,3
1235 DATA238 INC $ 3
1240 DATA240,BEQ #$ 2,241,SBC ($2,2,245,SBC $3,2,246,INC $3,2,248,SED,1
1245 DATA249,SBC $4 3
1250 DATA253 SBC $3,3,254 INC $3,3
1260 DATA999,999,999

READY.
```


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Open Forum

Open Forum is for you to publish your programs and ideas. Take care that the listings you send in are all bug-free. Your documentation should start with a general description of the program and what it does and then give some detail of how the program is constructed.

Clock
on Commodore 64

This program draws an alarm clock and enables you to set both the time and when you want the alarm to go off. The sound facilities on the Commodore 64 enable a very effective alarm sound to be developed. It wouldn't be difficult to make it ring with any sound you want, eg, Space Invader noises etc.

```
100 REM ********
110 REM **CLOCK**
120 REM ** BY  **
130 REM **F.BUYS*
140 REM ***1984**
150 REM *********
160 G=54272
170 FORT=GTOG+26 POKET,0 NEXT
180 POKEG+24 15 POKE53280,0 POKE53281,0
190 TI$="000000" GOTO700
200 DATA5,28 30 31,156,158,159,0
210 D$(0 0)=" ┌──┐" D$(1,0)="|   |"
220 D$(2 0)="|   |" D$(3,0)="|   |"
230 D$(4 0)=" └──┘" D$(0,1)="  |  "
240 D$(1 1)="  |  " D$(2,1)="  |  "
250 D$(3,1)="  |  " D$(4,1)=" ─┴─ "
260 D$(0 2)=" ───┐" D$(1 2)="    |"
270 D$(2,2)=" ┌──┘" D$(3 2)="|    "
280 D$(4 2)=" └───" D$(0 3)=" ───┐"
290 D$(1,3)="    |" D$(2,3)="  ──┤"
300 D$(3,3)="    |" D$(4 3)=" ───┘"
310 D$(0,4)="|   |" D$(1,4)="|   |"
320 D$(2 4)=" └──┤" D$(3,4)="    |"
330 D$(4,4)="    |" D$(0,5)=" ┌───"
340 D$(1 5)="|    " D$(2,5)=" └──┐"
350 D$(3,5)="    |" D$(4,5)=" ───┘"
360 D$(0,6)=" ┌───" D$(1,6)="|    "
370 D$(2,6)="├──┐" D$(3,6)="|   |"
380 D$(4,6)=" └──┘" D$(0 7)=" ───┐"
390 D$(1,7)="    |" D$(2,7)="   ┌┘"
400 D$(3 7)="   | " D$(4,7)="   | "
410 D$(0,8)=" ┌──┐" D$(1 8)="|   |"
420 D$(2 8)="├──┤" D$(3 8)="|   |"
430 D$(4,8)=" └──┘" D$(0,9)=" ┌──┐"
440 D$(1,9)="|   |" D$(2,9)=" └──┤"
450 D$(3,9)="    |" D$(4,9)=" ───┘"
460 PRINT"♥"
470 GOSUB 630 PRINT"" TAB(12)"■ ■"
480 IF A$=TI$THEN480
490 IF LEFT$(A$,4)=LEFT$(TI$,4) THEN
    M=5 Y=20 GOTO 520
500 M=1 Y=0 POKE54277,64 POKE54278,128
    POKE54276,33 POKE54273,17
    POKE54272,37 POKE54276,0
510 POKE54277,0 POKE54278,0
520 A$=TI$
530 FOR X=MTO6 PRINT "  TI$
540 A=ASC(MID$(A$,X,1))-48
550 GOSUB630 PRINT PRINTTAB(26)"
    " PRINT PRINT TAB(26)" " GOSUB 630
560 FOR E=0TO4
570 PRINTTAB(Y)D$(E,A) NEXT
580 Y=Y+6 IF Y=12 THEN Y=14
590 GOSUB630 PRINT GOSUB620 PRINT GOSUB620
600 IFY=26THENY=Y+2
610 NEXT GOTO480
620 PRINTTAB(26)"■ ■" RETURN
630 PRINT ""
640 IFTI$=AA$THEN930
650 READJJ IFJJ=0THENRESTORE GOTO650
660 PRINTCHR$(JJ)
670 IFJJ$=AA$THEN930
680 PRINT""
690 RETURN
700 PRINT"♥ CLOCK COMMODORE 64 *** JAN. 1984"
710 PRINT" '1' SET TIME"
720 PRINT" '2' ALARM SET"
730 INPUT"MAKE YOUR CHOISE",A$
740 IFA$="1"THEN810
750 IFA$="2"THEN900
760 GOTO700
770 PRINT"GIVE TIME IN 6 CHARACTERS" INPUTJJ$
780 IFLEN(JJ$)<>6THEN770
790 TI$="000000"
800 TI$=JJ$
810 PRINT""
820 PRINT" GIVE TIME IN 6 CHARACTERS"
830 INPUT"TIME",JJ$
840 IFLEN(JJ$)<>6THEN770
850 TI$=JJ$
860 GOTO200
870 PRINT"♥"
880 IFJJ$=""THEN700
890 GOTO200
900 PRINT" GIVE ALARM TIME IN 6 CHARACTERS"
910 INPUT" ALARM TIME ",AA$
920 GOTO700
930 REM *** SOUND ***
940 BD=53280 BR=BD+1 POKEBD,0 POKEBR,0
950 POKE54296,15 POKE54277,9 POKE54284,
    9 POKE54291,9
960 POKE54278,48 POKE54285,48 POKE54292,48
970 POKE54276,17 POKE54283,17 POKE54290,17
980 G(1)=54273 G(2)=54272 G(3)=54280 G(4)=54279
    G(5)=54287 G(6)=54286
990 FORSL=1TO6 POKEG(SL),0 NEXT
1000 FORCZ=0TO50
1010 DL=INT(RND(1)*255)+1 FORSL=1TO6 POKEG(SL),
     DL NEXT POKEBD DL POKEBR DL
1020 NEXT POKEBD,0 POKEBR,0 FORSL=1TO6
     POKEG(SL),0 NEXT
```

Clock
by F Buys

Open Forum

Big Draw

on Spectrum

This program enables young children to draw simple block pictures patterns lettering etc in black on a white ground A green cursor "*" can be moved around the screen When "0" is pressed a black square (Graphics Shift 8) is printed at the top left of the cursor If the cursor is moved on top of the black square it is rubbed out.

If the cursor is moved to the extreme left or right top or bottom of the screen it will stay there until moved away If the "0" is pressed when the cursor is at the left or top of the screen the square prints for a fraction of a second to warn you you are on the edge and cannot print at that position You cannot print at the extreme right or bottom of the screen for obvious reasons It is best to start your picture at the top left of the screen but this is not essential as you can replace any squares you have to rub out It is an exercise in logic, as well as creative ability to use the program well

If you press "R" then the program is finished and you can enter *RUN* to draw another You can invent your own games with this program eg, you can create a maze and starting with the cursor outside, ask your friends to find their way to the centre without rubbing out any black squares

```
  10 PRINT AT 5,11,"BIG DRAW";AT
 8,3;"A PROGRAM FOR YOUNG ARTIST
S";AT 11,4;"An ALLIS DESIGNS PRO
GRAM";AT 13,13,"© 1983"
  20 PAUSE 200  BORDER 5: CLS
  30 PRINT AT 1,2,"You can move
a green star by    pressing the
ARROW keys 5,6,7   and 8."
  40 PRINT AT 5,2;"If you press
0 a ■ will be      printed at th
e top left of      the star.";AT
 15,2;"When you are finished pre
ss R."
  50 PRINT AT 9,2:"If you move t
he star on to       the ■ it will
 be rubbed out.";AT 12,2;"You ca
n save your picture        on tap
e- ask your dad.";AT 18,8;"Press
 any key": PAUSE 0: CLS
  60 LET a=11  LET b=16
  70 GO TO 220
  80 PAUSE 20: PRINT AT a,b,"
  90 IF INKEY$="r" THEN GO TO 26
0
 100 LET x=a: LET y=b
 110 IF x=0 THEN PRINT AT x-1,y-
1;" "
 120 IF y=0 THEN PRINT AT x-1,y-
1;" "
 130 IF INKEY$ "0" THEN PRINT AT
x-1,y-1;"■"
 140 IF INKEY$="5" THEN LET b=b-
1
 150 IF INKEY$="8" THEN LET b=b+
1
 160 IF INKEY$="6" THEN LET a=a+
1
 170 IF INKEY$="7" THEN LET a=a-
1

 180 IF b<0 THEN LET b=0
 190 IF b>=31 THEN LET b=31
 200 IF a<0 THEN LET a=0
 210 IF a>=21 THEN LET a=21
 220 PRINT AT a,b; INK 4;"*"
 230 GO TO 80
 240 CLS : BORDER 7: PRINT AT 4,
4;"Hope you had fun."
 250 PRINT AT 17,2;"Enter RUN to
draw another       picture "
```

Big Draw
by R Williams

Microradio

GW6JJN



Hi-tech radio

Some of you may have heard the phrase cellular radio and it certainly seems to be the in thing in Hi-tech circles these days.

Cellular radio is the answer to a problem that has been worrying the telecommunications people for years, not least British Telecom The problem stems from the enormous demand, particularly in the major cities for mobile personal radio — telephones in cars.

The radio spectrum is already overcrowded and new demands are being made daily for channels for personal use Under normal conditions, two stations on the same channel will interfere with each other making communication impossible so each mobile has to use a different channel within a given range When certain weather conditions prevail this range can be extended causing even more interference

As technology advances people are less and less satisfied with telephones that have wires and need to be plugged into the wall Trying to use a CB or amateur radio in a big city for local chats is already extremely difficult. Finding an unused and private channel just isn't conceivable

So the idea of cellular radio was born The basic idea is to divide each area into a number of small cells each with a base station of very low power serving that cell By reducing the area to a cell the number of channels required is drastically reduced The channels used in each cell will be different to those in the next cell, so one cell will not interfere with the next As low power is being used, another cell several miles away can use the same channels over again

If this system is arranged in groups of seven cells than the radio spectrum in use can be divided by seven giving each cell in the group exclusive channels The next group of seven cells will be an exact replica of the adjacent seven and so on.

Now comes the real difficulty How does a mobile move from one cell to the next and from one group to the next? The answer as always comes back to the computer Extensive switching networks controlled by microprocessors enable each cell s base station to communicate automatically with the next Although wire is used to link the bases, it will eventually be done with narrow beam microwave links.

What this means in practice is that anyone either on foot or in a mobile can dial a number using an area code to give an approximate idea of the location of the desired station and the signal will be transmitted from the relevant base stations until the subscriber is found and has responded

Several American cities already run successful cellular systems and in Europe there is the Nordic Mobile Telephone system that covers Sweden Norway Finland and Denmark with over 20 000 subscribers Spain, too, has a system in Madrid, as does Tokyo

A recent report on cellular radio made the confident prediction that in ten years time no matter where in the world you are you will be able to reach into your pocket or dial up your wrist radio and talk to anyone you care to call That is of course, if they haven't decided on some peace and quiet and left their personal phone at home

Ray Berry GW6JJN

This series of articles is designed for radio and microcomputer enthusiasts alike If you have any queries that you want answered, hints and tips to share or topics that you would like to see covered write to Ray Berry, Microradio *Popular Computing Weekly* 12 13 Little Newport Street, London WC2H 3LD

Open Forum

Geometric
on Spectrum

This program creates a geometric pattern linked to a tune. You press a number from 1 to 5 — the higher the number the more complex will be the patterns. You can get a copy of the design on a ZX printer if you have one.

```
   1 GO SUB 2000
   5 INK 7: PAPER 1: BORDER 1: C
LS
   8 DIM t(65)
  10 LET a=10: LET b=120: LET c=
88
  20 LET a$=STR$ (INT (4*RND))
  30 IF RND<ra THEN  LET a$=a$+"
+SIN f*SIN f"
  40 IF RND<ra THEN  LET a$=a$+"
+COS f*COS f"
  50 IF RND<ra THEN  LET a$=a$+"
*COS (f*2)"
  60 IF RND<ra THEN  LET a$=a$+"
-SIN (f*2)"
  70 IF RND<ra THEN  LET a$=a$+"
-SIN (f*3)"
  80 IF RND<ra THEN  LET a$=a$+"
+COS (f*3)"
  90 IF RND<ra THEN  LET a$=a$+"
+SIN (f*4)"
 100 IF RND<ra THEN  LET a$=a$+"
+COS (f*4)"
 110 IF RND<ra THEN  LET a$=a$+"
+SIN f*SIN f*SIN f"
 120 IF RND<ra THEN  LET a$=a$+"
+COS f*COS f*COS f"
 130 IF RND<ra THEN  LET a$=a$+"
+COS f*COS f*COS f*COS f"
 140 IF RND<ra THEN  LET a$=a$+"
-SIN f*SIN f*SIN f"
 890 IF LEN a$=1 THEN  GO TO 20
 900 PRINT a$: PAUSE 100: CLS
1000 REM
1010 FOR f=0 TO PI*2+.1 STEP .1
1020 LET r=a*VAL (a$): LET t(f*1
0+1)=r
1025 REM  IF r<10 THEN  LET r=r+
5*RND
1030 LET x=b+r*SIN f: LET y=c+r*
COS f
1040 IF f=0 THEN  PLOT x,y: GO T
O 1060
1050 DRAW x-PEEK 23677,y-PEEK 23
678
1060 NEXT f
1070 FOR n=1 TO 3: FOR f=1 TO 64

1080 IF INKEY$="" THEN  BEEP (.0
5+.05*RND)*(t(f)<=69),t(f)*(t(f)
<=69) : NEXT f: NEXT n
1090 IF INKEY$="p" THEN  COPY :
LPRINT a$: GO TO 1070
1100 CLS : GO TO 20
2000 PAPER 2:INK 7:BORDER 4 :CLS

2010 PRINT "GEOMETRIC TUNES"

2020 PRINT "(c) RTL 1983": PRINT

2030 REM This program is  avail-
able  with  many  others  on the
"Porthtowan Combo Tape" from the
company at  West  Towan  House,
Porthtowan,  Truro, Cornwall TR4
8AX price £4. (reduces to owners
of issue one as per leaflet).
2040 PRINT "This program generat
es geometricpatterns and plays t
heir tunes.": PRINT
2050 PRINT "After the pattern is
 plotted itstune is played three
  times.  Ifyou press p, then it
  is  copiedon your Sinclair pri
nter,and thetune played again.
  Press  anyother key and the  n
ext  patternis produced."
2060 PRINT : PRINT "Press a numb
er from 1 to 5.  Thehigher numbe
r gives more compli-cated patter
ns.": PRINT
2070 IF INKEY$="" THEN  GO TO 20
70
2080 LET r=CODE (INKEY$)-48: IF
r<1 OR r>5 THEN  GO TO 2070
2090 LET ra=r/10: RETURN
```

Geometric
by J de Rivaz

Arcade Avenue

Infinite loop

More letters arrive on the subject of *Jetset Willy* than anything else and understandably so. Now that the prize from Software Projects has been claimed, I can reveal some of the many pokes that people have sent in.

First of all Mike Smith of Edinburgh sends in the inevitable infinite lines poke — insert line 35 *Poke 35899,0*. However, as you will soon find out, you can get yourself into situations where you lose your lives continually in a sort of infinite loop — so press *Caps Shift* and *Break* to reset. This means that it is still not easy to get around.

Mark Ridgeway of Walsall has sent in this short program that does away with all the monsters and lets you explore the mansion with ease.

```
10 REM ***MONSTER ELIMINATE**
20 REM **INFINITE LIVES  **
30 REM ****MARK RIDGWAY 1984**
40 PAPER 0: CLS: CLEAR 25000
50 PRINT AT 1,0;INK 7; PAPER
2; BRIGHT 1;"PUT JET-SET TAPE IN"
60 PRINT AT 2,0;INK 7; PAPER 2;
BRIGHT 1;"START TAPE AND PRESS
ANY KEY"
70 PAUSE 0
80 CLS:PRINT AT 8,7; INK 7; PAPER
4; FLASH 1; BRIGHT 1;"LOADING
THE CODE"
90 LOAD ""CODE
100 REM **REMOVE CODE**
110 PRINT AT 2,7; INK 7; PAPER 3;
"PLEASE WAIT 2 MINS!"
120 FOR I=41000 TO 49100
122 IF I>41000 AND I<42300
THEN GOTO 128
126 POKE I,0
128 NEXT I
130 REM**INFINITE LIFE**
140 POKE 35890,0
150 BEEP 0.7,9: PRINT AT 2,7;
INK 7; PAPER 2;"TOUCH ANY KEY
"; PAUSE 0
160 RANDOMIZE USR 38792
```

Simon Walker of Redditch sent in *Poke 37874,00* which means that all the objects are magically collected for you as soon as you enter the room! He also says that *Poke 35114,4* will get rid of the problem about entering the Attic as well as removing some monsters from ten of the rooms (you can find out which for yourselves) and the rope from the Cold room. Unfortunately, the latter does not sound too useful.

Simon then relates a long story about Software Projects failing to include him amongst possible winners, despite several letters and phone calls. Unfortunately, since you confess to having cheated with your pokes I can't really follow this one up for you, Simon. He ends up by suggesting that "Software Projects did not want anyone to win" and this thought is echoed by I Bristow of Chippenham who feels that "the game is impossible without cheating".

Well, having talked to Matthew Smith I am sure nothing so devious was planned — he designed the game to give people a real challenge. To prove it I would like people who finish the game, without cheating, to write in.

Finally this week I have come across a program called *Manic Designer* by P+M Software that allows you to redefine the monsters on the different screens of *Manic Miner*.

If anyone has used this program with great success then please let me know.

Tony Kendle

The Arcade Corner is a new section for anyone who enjoys playing arcade games. If you have any comments, from playing tips on difficult games or programs you'd particularly like to praise (or blame!) then write to Tony Kendle, Arcade Avenue, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD.

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Tony Bridge's Adventure Corner



Hero of heroes

This week some more HHOF Darren Buckley, with 82 5% on his CBM64 Donald Hindmoor the question you ask about *Pimania*, Donald will lead you to you completing the adventure, so I won t help you, but it might be worth thinking about the mathematical symobl, Pi, and another representation of it This might give you some idea of the gifts to take into the Caverns of Ivory Martin Otway with a score of .2.5% — the Commodore version, Martin, uses this method to denote 102.5% David Atter and Andrew McNeil with 75% Steven Patullo with 76% — Steven got round the annoying habits that Gandalf has by the simple method of shoving him in the chest at the very start! Steven also says that he killed the Dragon himself and thinks that Bard is useless — you are unique Steven!

Gregg Reid with a score of 60% Gregg managed to cleave the hideous Goblin s skull by throwing dead Gollum at him! Mark Nelson of Tamworth in Staffs Thanks for you kind remarks incidentally Mark and I hope you enjoy *Ship of Doom* (try melting the ice).

Michael Woodman and Jonathan North with various scores between 62 5% and 97 5% Christopher Dale with 87 5% In *Knight s Quest* try using a bit of force with the steel bar to open the grating — the rope will uncoil itself when the time comes for you to use it

Andrew Barton 72.5% on his Spectrum Andrew mentions the Red Golden Dragon that I was talking about some weeks ago Then I thought that it was unique to the Commodore version but Andrew tells me that he has come across it on his Spectrum, and a friend with an Dric has also found the bug Andrew Simia of Edgeware, with 47 5% — not the highest score! In answer to your question about *Ship of Doom* Andrew, how would you get a drink from a barman in real life? Try climbing on the table in *Golden Apple* in order to reach something interesting — the safe will be useful right at the end of the adventure when you have found all the treasures.

Rosanna Coms of Enfield with 105% on her Spectrum (I don t often see such a high score on this machine) Rosanne says "I left Thorin in the Goblin's dungeon, killed no goblins and didn t have the golden key The trick seems to be to go down on a barrel several times, and also, go through all the doors in all directions. My mother now tries to do the adventure with a minimum score This can be fun as it involves going down the forest road without the ring! Another good trick is to send the butler down on a barrel and get him to capture first Bard and then the dragon You can get one to kill the other in the comfort of the dungeon!"

Martin Hagen 70% with help from Paul Gibbs and brother Russell "Well Bilbo didn t do it on his own did he?! My high score for HHOF is 942 (87 monsters and 6 rings)" R Glover with 60% Although the side door is not essential to solving the adventure, the way to get into it is by asking Thorin to use Thrain s key (in fact it's always a good idea in this as in many other adventures, to ask other people to do your dirty work) S R Howick of Dunstable, with 95%

To finish the week — there are some more names to add to the HHOF next week and some hints n tips — I m going to quote at length a letter from Paul Duffield which will give an idea of the way in which *The Hobbit* plays This may be of use to those of you who may be undecided about buying this great adventure (and also incidentally, shows how important reading the book can be!)

"As a dedicated Tolkien fan (I ve read just about everything he s written, and *The Lord of the Rings* at least 30 times!), I was familiar with the characters and locations — the Trolls gave me some trouble, though in the book, they catch you, and Gandalf helps you to escape After a few low-percentage deaths the solution dawned on me and I went to Rivendell suitably kitted out with sword and rope

"My knowledge of the book suggested that capture by the goblins was the next step and after a rest for some food at Beorn s House, this was quite easily accomplished Escape from the goblins required some thought, even with the benefit of the clue provided, but eventually I got through the window I was stuck here for some time and I think this is the most frustrating part of the adventure, due to the goblins (are there really only five?) taking so much pleasure in cleaving skulls Having died and re-started several times I was near to a nervous breakdown which wasn't helped by the Wood Elf!

After a pleasant chat with Gollum, I persuaded the Wood Elf to incarcerate me in his dungeon I think the clue here gives too much away and I was soon riding the Barrel to Long Lake Bard was most co-operative, if not talkative, and I soon had the treasure, and a dead dragon Wondering now to get home I wandered about a bit in the vicinity of the Lonely Mountain A few trips to and from Laketown later I was at the Waterfall The spiders got me in the forest and I died with a score of 87 5% [There follows an account of Paul s voyages around the middle earth] Eventually, I got Elrond to help me with the treasure and I was soon back at Rivendell with a large inventory and a score of 0 0% (?100%)

"Not being able to enter my Hobbithole because it was too full was a little perturbing I had visions of the place being ransacked by the Sackille Baggins!

"I suppose it s nice to be Hero of Heroes etc but I was disappointed to have completed what is a truly superb adventure — do other adventurers feel the same way?

"Anyway there it is I now await Melbourne House s next offering although I expect to find it more difficult as I'm not a fan of Sherlock Holmes Is anyone working on a *Lord of the Rings* adventure or wouldn t it fit into 48K?"

As far as I know, Paul, Tolkien s publisher's will not allow a compurst version of the great work — it would probably be in three or four separate parts a la *Wrath of Magra* but we will be very lucky to ever see it I m afraid

This series of articles is designed for novice and experienced Adventurers alike Each week Tony Bridge will be looking at different Adventures and advising you on some of the problems and pitfalls you can expect to encounter So if you have an Adventure you want reviewed or if you are stuck in an Adventure and cannot progress any further write to Tony Bridge Adventure Corner, *Popular Computing Weekly* 12-13 Little Newport Street, London WC2R 3LD.

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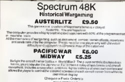
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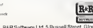
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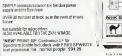
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Peek & Poke



Smooth graphics

A Carrington of Solihull writes

Q **I would like to know how smooth graphics are created in machine code on the ZX Spectrum. I think that this is an issue that has eluded many programmers as none I know are able to help me. Perhaps an article on the subject would be in order.**

A Machine code graphics on the Spectrum, or indeed any other machine, would make a good subject for a series of articles in any magazine. However I think that you would find a book *Supercharge your Spectrum*, published by Melbourne House, very useful. It deals with a number of routines for controlling screen output (scrolling, partial clearing, etc).

The big advantage of such a book is that it gives you a base from which you can build your own library of graphic routines.

CP/M on loan

David Brown of Whitby, North Yorkshire writes

Q **I have recently upgraded my computer to run CP/M software and remember reading somewhere recently of an organisation which loaned out or gave away CP/M programs. Can you help with an address or contact?**

A I'm afraid not. I have not come across such a benevolent organisation, and I must confess that I would be surprised if one existed. The problems associated with lending or giving away CP/M software, much of which is licensed for use only on a specific computer are very great. However, if any of you out there know differently please let me know.

Information transfer

Scott McFarlane of Edinburgh writes

Q **Could you please tell me something about the Micro-myte acoustic modem. I know it is cheaper than the Prism, but can I get on to Prestel or Micronet with it and is it prone to interference as I have heard?**

A The Micro-myte is a software controlled acoustically coupled modem aimed specifically at Spectrum owners. It uses the cassette port rather than the more standard RS232C serial interface.

It can't be used to communicate with Prestel or Micronet or indeed any of the numerous bulletin boards. It can however be used to allow quick and easy transfer of information between Spectrums. It transfers data at a rate of 1032 baud rather than the more normal 300 baud.

All acoustic modems are prone to interference of one sort or another from CB radio to bad telephone lines. The Micro-myte is no worse in this respect than any other acoustic modem.

Suitable conversion

Kit Woters of Camberley, Surrey writes

Q **After reading from many sources how the Dragon 32 and Tandy machines are basically similar, I decided to try a few Tandy programs on my Dragon 32.**

The result was not altogether a surprise; similar they might be, equal they are not. The main problem I am having is finding a suitable conversion for *DEF INT* and *DEF DBL*, can you help?

A *DEF INT* and *DEF DBL* set up special types of variable. The first established an integer variable (no decimal places) and the second an integer variable of double length (8 bytes). Normal numeric variables will be OK for this purpose as long as you remember to keep removing the fractional parts of any calculations (using *INT* or *CINT*).

There is a book *Hot programs to feed your Dragon & Tandy Colour Computer* which sounds right up your street. It contains a large number of programs, including a Tandy to Dragon converter (and vice versa). The book costs £6.95 and is published by Sigma Technical Press.

Not complete

Malcolm Irving of Houghton-le-spring, Tyne and Wear writes

Q **I have a Vic 20 and will soon be getting a 64K Ram pack. Do you know if I would be able to play CBM64 games on it and if I would be able to use CBM64 cartridges on my Vic if I had a 64K Rampack and a motherboard.**

A As the CBM64 and the Vic 20 are not compatible I am afraid the answer to all your questions is a definite no.

Even with a 64K rampack, you will not be able to use any CBM64 software of any type on your machine because the operating systems and memory maps for the two machines are different.

Bulletin service

W I C Mitchell of South Shields, Tyne and Wear writes

Q **I own a 16K ZX81 and printer and I would like to access *Viewdata*. Is this possible with my machine? Apparently, Maplins offer a suitable 300 baud modem. Could you give me some more information about it please? Also, what 300 baud services are available?**

A It is not currently possible to access Viewdata with your machine I'm afraid. Although the Maplins modem is suitable for the ZX81, it runs at 300 baud and not the 1200 required for *Viewdata* type systems.

The Maplins modem uses a standard serial RS232C interface to the computer (also supplied by Maplins). The device is supplied in kit form and is a very cheap way into the communications area. 300 baud services are typically of the bulletin-board type and these are usually free. There are a number of such services in the UK and overseas.

Sord programs

L Wookey of South Yardley, Birmingham writes

Q **Is there any way of converting programs written for the Spectrum, BBC etc for use on the Sord M5? I have seen plenty of books concerning other micros, but nothing on the Sord. What I want is a book called something like *Understanding your Sord M5* — do either you or your readers know of a book such as this.**

A Firstly converting programs written for the Spectrum or the BBC to run on the Sord will be no easy matter.

Basic programs will be bad enough because of the differences in dialect from machine to machine and machine code programs will be virtually impossible to convert because of the different memory mapping of the various machines.

You may be able to convert some smaller Basic programs, but I would not attempt anything too big without all the necessary manuals.

I'm afraid I have not come across the book you want which is surprising as all the other popular micros have at least one like that.

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BBC B 5 months old Some games £350 No offers. VIC 20 + cartridge cassette + S/W + 16K ram pack £150 Tel 0760 33637

BBC B computer disc drive Watford disc interface First offer over £550 Mike Tel 01-602 0277 eves

BBC B boxed as new 1.2 O/S with cover Cassette recorder all leads Quickshot joystick I + II with interface. £70 of S/W BBC mags. £390 ono Tel 01-784 7079 eves

BBC model 3 fitted with Acorn DFS alseways expansion board wordwise graphics rom. Toolkit rom £450 Also 40 track disc drive £160 Tel 0245 81078 eves

BBC B nearly new Cover £60 of S/W magazines, cassette recorder Quickshot joystick £380 For everything. Tel 01-794 7079 eves

ADVENTURE HELPLINE

Mysterious Adventures Circus on Spectrum Where is the cable? How do you get on the road? How do you open the maintenance wagon? And where is the petrol? M Hutchinson 21 Greenwood Terrace, Barnsley S Yorks

The Hobbit on Spectrum How can I open the trap door in the Goblin's Dungeon? And how can I get the ring to become invisible and where? Michael Waslan Babengauserst 200, D-4800 Bielefeld 1 West Germany

COMPUTER SWAP

Computer Swap entries are limited to 30 words. Either fill in the accompanying form and send to Computer Swap, *Popular Computing Weekly*, 12/13 Little Newport Street, London WC2R 3LD or telephone 01-437 4343.

All software offered through computer swap must be in original condition and for private sale only.

It cannot be swapped

Warning It is illegal to advertise pirated software.

COMPUTER SWAP

Please write your copy in capital letters on the lines below

Name ....

Address ....

....

Telephone ....

Adventureland on Vic 20 How do you examine the thing in the lava and how do you get the Royal Honey? Daved Bailey 146 Newmarket Road Bulwell Nottingham

The Hobbit on Spectrum I can I get in a barrel at the Elvinkings cellars Pale bulbous eyes keep killing me and I keep getting stuck in the mountains Chris Colbeck, Bain House Mulberry Carth Thorp Arch, Wetherby Yorks LS23 7AF

Adventure 1 on ZX81 I can't open the door or move the boat. D J Lay 91 Allport Lane Bromborough Wirral Merseyside 051 334 9096

The Hobbit on C64 How do you get to the spider's web and what are the commands for opening the side door Gavin McAlinden 12 Woodville Avenue Lough Road Lurgan Co Armagh N Ireland

Knight's Quest on Spectrum How do I use the boat and now do I gain access to whatever lies beyond the open panel? P Ruddick Tree Tops Pinewood Road Sands High Wycombe Bucks

Colditz on Spectrum How do I get off the window ledge — (I have the rope)? How do I stop the floor creaking? How do I get out of the sewer pipe? B Matthews 144 Westerleigh Road Downend, Bristol BS16 6HT

Adventure C Ship of Doom on Spectrum I cannot open the door once I have put the key into it Peter Jakubske 476 Liddesdale Road Glasgow G22 TBX

Lords of Time on Spectrum I cannot get past the door in the caveman zone (Inventions Room) Also how do you get through the maze (Time Zone 6)? Martin Harris 151 Dawlish Drive Seven Kings Ilford Essex 01 597 5110

Inca Curse on ZX81 I cannot find the gold at all! Simon Ward 29 Dinthill, Hollinswood, Telford Shropshire TF3 2DT

Voodoo Castle on Vic 20 How do you restore the JuJu man back into the Stand? Anthony Bailey 146 Newmarket Road Bulwell Nottingham

Dungeon Adventure on BBC How do I deal with the Black Sphere? What should I do about the boat or the Zombie A R Michael 33 St Cross Road Winchester Hants SO23 9JA

Lost City on BBC How do I get out of the valley? N Chounan, 59 Frederick Road Leicester

Diary

What Micro? Computer Show	Battersea Park London	July 14-15 10 00am-7.00pm	£1.50	VNU Business Publications Evelyn House 62 Oxford Street London W1A 2HG 01-636 6890
Electron and BBC Micro User Show	Alexandra Palace London	July 19-21 10 00am-6.00pm July 22 10 00am-4 00pm	£3 00 adults £2.00 children	Database Publications 68 Chester Road Hazel Grove Stockport 061-456 8383
Sinclair Computer Users Exhibition	Essex Exhibition Centre Moulsham Street Chelmsford Essex	July 21 10 00am-6 00pm	50p adults 30p children	Essex Exhibition Centre Moulsham Street Chelmsford 0245 25800
Scottish Personal Computer World Show	Assembly Halls George Street Edinburgh	July 26-27 9.30am-8.00pm July 28 9 30am 6.00pm	£1 50 adults £1 00 children	Scottish Industrial and Trade Exhibitions 8a Charlotte Square Edinburgh EH2 4DR 031 225 5486
2nd Official Acorn User Exhibition	Olypia 2 Hammersmith Road London	Aug 16 (trade day) Aug 17 19	£2.00 adults in advance £3 00 and £2.00 on door	Small Enterprises 20 Orange Street London WC2H 7ED



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New Releases

BIGGER AND BIGGER

Alice in Videoland is a program for the Commodore 64 that had people gasping in disbelief at the graphics and sound when demo versions of it were shown by Audiogenic at shows last year

The program is now available and is essentially four arcade games linked together by theme and the fact that success in earlier sections affects your performance later on Even playing very badly, though, it is possible to play each section

Because of the size of the game new sections have to be loaded in from disc — no tape version of the game is available The first, and most frequently viewed section is not part of the game at all but a title screen where Alice, in a forest setting, follows a bouncing rabbit to the site of a rabbit hole to the accompaniment of a specially composed music and the swooping of birds It s spectacular except for the rotten 64 scrolling which means the top of the screen moves faster than the bottom (slow processing time)

The game proper begins as Alice decends down the rabbit hole and finds a variety of mysterious objects which she must catch in her basket, which itself must be caught, as she floats down — cakes, bottles, keys, etc

In part one, section two Alice can use the things she has collected — keys unlock doors and bottles and cakes make her smaller and bigger The more Alice has collected, the wider area she will be able to explore and the more points will be gained

The second section has Alice by the magic mushroom and Cheshire cat — she must jump up to catch bread and butterflies and rocking horse flies — the latter turn into balls and are used in part four Alice is made bigger and smaller by eating different sorts of mushrooms

Section three involves a chess board a jabberwocky, and Tweedledum and Tweedledee, two knights and Alice You have to use the Knights to help Alice across the chess board The final part has Alice playing croquet with a flamingo — she has to hit balls with it bouncing them against a bush and a fence through a card soldier hoop — the balls earned in part two help her up her score

There is a continuous musical soundtrack which is cleverly arranged and suitably demented (like a ten year old Jean-Michel Jarre) and you are unlikely to find much better graphics on any other 64 game My feeling though is that although the games are not awful to play — they are not tremendous either At £12 95 it is reasonable value for money

Program	*Alice in Videoland*
Price	*£12 95*
Micro	*Commodore 64 (+ Disc)*
Supplier	*Audiogenic PO Box 88 Reading Berks*

Pick of the week

SERVE AND VOLLEY

Match Point is the latest game from Psion who have otherwise all but left the Spectrum software market The timing for release is, of course, impeccable and so is the game

Quite simply you play tennis moving a little man left and right, towards the net and away from it — you can play against the computer or another player, keyboard joystick keyboard control keys and

Obviously when you reduce a game as complex as tennis to up down, left, right fire (well, swing bat to be exact) you re going to lose something — but less than you d think The movement of the ball has been arranged with astonishing precision, you can radically affect the kind of return by how close you are to the net or whether your return is forehand or backhand

There are a vast number of game permutations one or two whether you're playing quarter finals, semi finals or finals — this latter set being the skill level effectively The graphics are wondrous complete with bell boys who run on to get the ball if it goes into the net

Program	*Match Point*
Price	*£6 95*
Micro	*Spectrum*
Supplier	*Sinclair Research Stanhope Road Camberley Surrey GU15 3DR*

GIANT CAMELS

There being so little of it, I feel duty bound to mention some independent Atari software and it comes from Llamasoft Jeff Minter has converted *Attack of the Mutant Camels* — his CBM 64 meisterwork — for the Atari machines

For those not familiar with Jeff Minter s style, giant camels threaten to overrun the earth by spitting laser You have to blast away at them in your tiny spacecraft and save all humanity

Using sundry machine code cleverness, you actually see the beasts plodding relentlessly across the landscape (all 10 screens of it) Aside from the game being great fun, it's also cheap at £7 50 (by Atari standards, that's under half price)

Program	*Attack of the Mutant Camels*
Price	*£7 50*
Micro	*Atari (any machine)*
Supplier	*Llamasoft 49 Mount Pleasant Tadley, Hants*

EXCELLENT GRAPHICS

The Hulk is a graphics adventure from Adventure International based on the popular comic book character and written by Scott Adams Versions are available for several machines but the company are particularly proud of the Spectrum version which they say has 'the best graphics ever seen in an adventure game' — the BBC edition, incidentally, doesn't have any graphics at all

Rising to such bait I inspected the Spectrum version closely — actually I think the graphics *are* excellent and certainly as good as the *Hobbit* with an authentic real comic book flavour although they only fill a third as opposed to two thirds, of the screen

Of the adventure itself, one must be more circumspect — it only understands two word commands 'take this' 'drop that' etc which is fairly primitive by present Spectrum standards, on the other hand coming as it does from the twisted mind of Scott Adams, the clues are fantastically challenging

The opening page has you as Dr Bruce Banner tied to a chair and trapped The general gist of solving the situation is not hard to grasp 'become the hulk but how? — the solution was discovered via a jokey suggestion in the *Popular* office — sneerers were horrified to see the screen change and the Hulk appear The suggestion? Now that would be telling

Program	*The Hulk*

Price	*£9 95 (other versions different prices)*
Micro	*Spectrum*
Supplier	*Adventure International 119 Bright Street Birmingham B1 1BE*

PLANNING AND LOGIC

You cannot have failed to notice that we at *Popular* think pretty highly of *The Quill* — what it meant, apart from anything else was that it became possible for people with good imaginations and no programming skill to create complex machine code text adventures Recent months have seen the release of dozens of good text adventures using the system

Now Gilsoft have adapted the system for the Commodore 64 which is in even more dire need of good text adventures than the Spectrum was. The system works in the same wey as on the Spectrum, although obviously there is a bit more memory to play around with and greater scope for sound manipulation

What *The Quill* does demand is some planning and logical thought Using a variety of menus you tell the system what the rooms are, ie, what description is in each and how the rooms are connected You then have to decide what objects are where and arrange the 'flags' These are a means of determining if an object is present or if an action has been taken and thus provide the means to constructing the basic conundrums that are the whole basis of adventures

The program enables you to 'run through' a program with diagnostics — a screen display of the state of the flags etc, to check that the game works as you intended it to The program comes with an extensive manual that explains it all pretty well, but as I say it needs some work on the adventure designer's part Highly recommended

Program	*The Quill*
Price	*£14 95*
Micro	*Commodore 64*
Supplier	*Gilsoft 30 Hawthorn Road Barry South Glamorgan CS6 8LE*

BULLS EYE

In *Dartz* Automata gives that well known sport beloved of enormously fat Northern men its own treatment Not content with providing a pretty fair computer impersonation of the game extras are provided in the form of pints of beer supplied by obliging fans which steadily affect your aim

Basic idea is to stop a cursor which is moving around a dart board When it comes to the number you require then stop another cursor which pin points the exact section you require — treble, double, bull etc

There are a variety of different games available 1 or 2 players 501 etc and technically the game is one of Automata's best in quite a while with good sound and graphics (particularly the little darts player who represents 'you' and throws the darts and drinks the pints

Program	*Dartz*
Price	*£5*
Micro	*Automata 70 Highland Road Portsmouth Hants PO49 DA*

HYSTERICAL

Hercules is an exceedingly strange Miner style game for Commodore 64 based loosely on the trials of Hercules Over 50 screens you have to find your way to various different objectives — this involves moving Hercules (who still has his hair I'm glad to say) in the classic left, right, jump, across ledges, podiums, ropes and other things

What makes the game different is that in many cases there is no obvious way to get where you want to go although you know it can be done — the solution often involves a risky leap into mid air, occasionally a step may appear Another problem is that if you spend too much time pondering your next move, the platform you're standing on is very likely to burst into flames

I was hooked, the graphics are nice and the music effects wonderfully hysterical (loud and shrieking) I expect the game to do well — particularly since the company putting it out are backed by Island records who are planning a TV campaign to promote it There are claims that the game is better than *Manic Miner* — I'm not sure about that but Miner fans will certainly enjoy it

Program	*Hercules*
Price	*£6 95*
Micro	*Commodore 64*
Supplier	*Interdisc 249/251 Kensal Road London W10 5DB*

SPRITE CREATION

White Lightning may, at first seem like another 'design games' utility for the Spectrum but, in fact, it is radically different from previous offerings

White Lightning is essentially two things a Forth program and a sprite program which have been designed to work not only together but under interrupt control, ie one routine carries on happily at 50 times a second oblivious to the conventional execution of another section of program

Whilst the basic White Lightning language is essentially Forth you can run programs from Basic if you want whilst you get familiar with Forth syntax

The sprite creation is very sophisticated — sprites can be larger than a screen and up to 255 sprites can be used at the same time Priorities can be given and the usual kinds of collision detection are allowed for

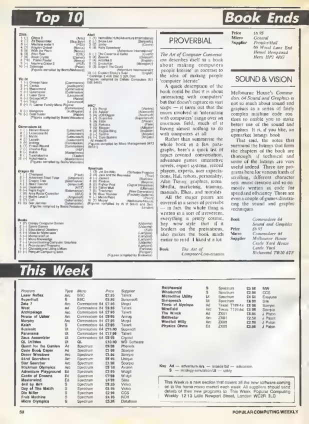
As you might expect, there is a pretty vast manual of over



130 pages which explains how the whole thing works, as well as a demo program This is certainly not a program for the beginner but for those prepared to spend time with it I suspect the possibilities could be endless

Program	*White Lightning*
Price	*£14 95*
Micro	*Spectrum*
Supplier	*Oasis Software Alexandra Parade Weston Super Mare Avon BS23 1QT*

New Releases is designed to let people know what software is coming on to the market. If you have a new game or utility which you are about to release send a copy and accompanying details to New Releases Popular Computing Weekly 12-13 Little Newport Street WC2R 3LD



Top 10

ZX81

1 ( ) Chess 2 (Artic)
2 ( ) ZX Disassembler (Bug Byte)
3 (–) Machine coder 1 (PSS)
4 (7) Krypton Ordeal (Nevus)
5 (6) Walk the Plank (Nevus)
6 (3) Alien Rain (CRL)
7 (9) Black Crystal (Carnell)
8 (10) Planet Raider (Nevus)
9 (–) Machine Coder 2 (PSS)
10 (–) Sabotage (Phipps)
(Figures compiled by Boots/Websters)

Vic 20

1 (–) Omega Race (Commodore)
2 (–) Cactus (Audiogenic)
3 (–) Mastermind (Commodore)
4 (–) Quizmaster (Commodore)
5 ( ) Laser Zone (Leisuresoft)
6 (–) Grooga MCP (Rabbit)
7 (–) Tritox (Leisuresoft)
8 (–) R. Carrier Family Menu Planner (Commodore)
9 (–) Motorwave (Audiogenic)
10 (–) Gold Buster (Rabbit)
(Figures compiled by Boots/Websters)

Commodore 64

1 ( ) Hover Bovver (Leisuresoft)
2 ( ) Laserzone 64 (Leisuresoft)
3 ( ) Matrix (Leisuresoft)
4 ( ) Lazarian (Leisuresoft)
5 (–) Biology (Commodore)
6 (7) Pinball Wizard (Commodore)
7 (–) Chuckie Egg (A&F)
8 (–) Hakim (Mastertronic)
9 ( ) Superpipeline (Taskset)
10 (–) Hunchmania (Mastertronic)
(Figures compiled by Boots/Websters)

Dragon 32

1 ( ) Champion (P'soft)
2 (–) Advanced Basic Tutor (Ampalsoft)
3 ( ) Dragon Trek (Salamander)
4 ( ) Basic Tutorial (Ampalsoft)
5 (–) Database (MST)
6 (–) Night Flight (Salamander)
7 (8) Area Radar Controller (SFA)
8 (–) Maths Level 2 (Ampalsoft)
9 (7) Golf (Salamander)
10 (6) Star Jammer (Salamander)
(Figures compiled by Boots/Websters)

Atari

1 (1) Incredible Hulk (Adventure International)
2 ( ) Bruce Lee (Datasoft)‡
3 (2) Smky (Coam)
4 (3) Rally Speedway (Adventure International)*
5 ( ) The Caverns of Kafka (Coam)
6 (4) Zaxxon (Datasoft)
7 (4) Airstrike II (English)
8 (7) Encounter (Movegen)†
9 (3) Saga II The Count (Adventure International)†
10 (–) Captain Sticky's Gold (English)
* Cartridge ‡ 48K Disc † 32K Disc
(Figures compiled by Calisto Computers 021 632 6458)

BBC*

1 (2) Pengi (Visions)
2 (3) Aviator (Acornsoft)
3 (4) JCB Digger (Acornsoft)
4 (7) Overdrive (Superiorsoft)
5 (9) 1984 (Visions)
6 (2) Fortress (Pace)
7 (5) Blagger (Alligator)
8 (8) Eagles Wing (Invasion)
9 (–) Spitfire (Alligata)
10 (–) Dam Busters (Alligata)
* All model B
(Figures compiled by Micro Management 0473 59181)

Spectrum

1 (3) Jet Set Willy (Software Projects)
2 (6) Jack and the Beanstalk (Thor)
3 (–) Zaxxon (Starzone)
4 (6) Pedro (Beyond)
5 (2) Fighter Pilot (Digital Integration)
6 (1) Sabre Wulf (Ultimate)
7 (5) Trashman (New Generation)
8 (4) Blue Thunder (Foundry Systems)
9 (–) Match Point (Psion)
10 (7) Mugsy (Melbourne House)
(Figures compiled by W H Smith and Son, London)

Books

1 (7) Creepy Computer Games (Usborne)
2 (–) Space Games (Usborne)
3 ( ) Educational Directory (PJR)
4 (–) Maths for Micro users (Ladybird)
5 (–) Micros are Fun (Ladybird)
6 (–) Micro Knowledge (Ladybird)
7 (–) Understanding Computer Graphics (Usborne)
8 ( ) Projects and Programs (Ladybird)
9 (–) Choosing and Using a Micro (Fontana)
10 (–) Penguin Computing book (Penguin)
(Figures compiled by Bookwise)

Book Ends

PROVERBIAL

The Art of Computer Conversation describes itself as a book about making computers 'people literate' in contrast to the idea of making people 'computer literate'.

A quick description of the book could be that it is about 'interacting with computers' but that doesn't capture its vast scope — it turns out that the issues involved in 'interacting with computers' range over an enormous field, much of it having almost nothing to do with computers at all.

Rather than summarise the whole book in a few paragraphs, here's a quick list of topics covered: conversation, adventure games, interactive novels, expert systems, record players, experts, user expectations, Hal, robots, personality, Alan Turing, graphics, icons, Shrdlu, marketing, training, manuals, Eliza, and morality.

All the major points are covered in a series of proverbs — in fact, the whole thing is written in a sort of irreverent, everything is pretty cosmic, hey wow style that, if it borders on the pretentious, also makes the book much easier to read. I liked it a lot.

Book	*The Art of Computer Conversation*
Price	*£6.95*
Micro	*General*
Supplier	*Prentice/Hall, 66 Wood Lane End, Hemel Hempstead, Herts HP2 4RG*

SOUND & VISION

Melbourne House's *Commodore 64 Sound and Graphics* is not so much about sound and graphics as a series of fairly complex machine code routines to enable you to make better use of the sound and graphics. It is, if you like, an upmarket listings book.

That said, the notes that surround the listings that form the chapters of the book are thorough, if technical, and some of the listings are very useful indeed. There are programs here for various kinds of scrolling, different character sets, music creation and so on, mostly written in code for speed and efficiency. There are even a couple of games illustrating the sound and graphic techniques.

Book	*Commodore 64 Sound and Graphics*
Price	*£6.95*
Micro	*Commodore 64*
Supplier	*Melbourne House, Castle Yard House, Castle Yard, Richmond TW10 6TF*

This Week

Program	*Type*	*Micro*	*Price*	*Supplier*
Laser Reflex	Arc	BBC	£7.95	Talent
Superfruit	S	BBC	£6.95	Simonsoft
Zeta 7	Arc	Commodore 64	£7.95	Mogul
West	Ad	Commodore 64	£9.95	Talent
Archipelago	Arc	Commodore 64	£7.95	Talent
House of Usher	Arc	Commodore 64	£6.95	Anirog
Murphy	Arc	Commodore 64	£7.95	Mogul
Kalah	S	Commodore 64	£7.95	Talent
Busicalc	Ut	Commodore 64	£75.00	Supersoft
Panorama	Ut	Commodore 64	£17.99	Talent
Zeus Assembler	Ut	Commodore 64	£8.95	Crystal
QL Utilities	Ut	QL	£10.00	WD Software
Quest for the Garden	Ad	Spectrum	£9.99	Phoenix
Code Book Caper	Ad	Spectrum	£1.99	Scorpio
Deser Wreckers	Arc	Spectrum	£1.95	Scorpio
84nd Scorchers	Arc	Spectrum	£5.95	Unique
Star Searcher	Arc	Spectrum	£1.99	Scorpio
Stickman Olympics	Arc	Spectrum	£5.50	Avalon
Adventure Playground	Ed	Spectrum	£7.95	Widgit
Castle of Dreams	Ed	Spectrum	£7.95	Widgit
Mastermind	Ed	Spectrum	£4.99	Silas
Bill by Bill	S	Spectrum	£5.95	Video
Day of The Match	S	Spectrum	£5.95	Video
Dix Miller	S	Spectrum	£2.99	CCS
Fruit Machine	S	Spectrum	£4.95	NCH
Micro Olympics	S	Spectrum	£5.95	Database
Reichswald	S	Spectrum	£5.99	MW
Whodunnit	S	Spectrum	£2.99	CCS
Microdrive Utility	Ut	Spectrum	£4.99	Easyuse
Simspeech	Ut	Spectrum	£5.99	Sim
Tomb of Myclops	Ad	Texas TI99 4a	£6.99	Scorpio
Minefield	Arc	Texas TI99 4a	£6.99	Scorpio
The Wreck	Ad	ZX81	£5.95	J Paton
Battlestar	Arc	ZX81	£2.50	J Paton
Windfall Willy	Arc	ZX81	£2.50	J Paton
Physics Ohms	Ed	ZX81	£3.95	J Paton

Key Ad — adventure/Arc — arcade/Ed — education
S — strategy-simulation/Ut — utility

This Week is a new section that covers all the new software coming on to the home micro market each week. All suppliers should send details of their new programs to This Week, Popular Computing Weekly, 12-13 Little Newport Street, London WC2R 3LD



Thinking Logo

At the end of education there has been no improvement in the thinking ability of children — in fact there has actually been a deterioration (Edward be Bono in *Children Solve Problems*)

With television programmes about his techniques for learning how to think and the *de Bono Thinking Course* being used by companies of many shapes and sizes, Edward de Bono is almost an establishment representative of radical approaches to the learning of thinking

De Bono comments that in a survey of inventive people the only uniform characteristic was their use of drawings and sketches in their thinking

Furthermore he notes that young children are not always very good at expressing their ideas in words but they can often communicate clearly through drawing

The emphasis on the visual as a means of helping in learning to think suggests a similarity between the de Bono approach and that associated with Seymour Papert (through use of Logo)

The most immediate impact of Logo is its use of Turtle Graphics which is highly visual And the main objective of Logo is to assist in the learning of how to think

There are, however, important differences between Papert s approach and that of De Bono

De Bono seems to be arguing that the possession of knowledge is far less important than an ability to think Thinking should be part of the curriculum alongside more conventional subjects The use of visual methods of learning and in thinking is to be highly recommended

And that to learn how to think one needs to follow a structured course of study so that people can learn from each other — if situations are unstructured then people will be working on projects so varied that the likelihood of learning from others is diminished

Papert s approach is different He also believes that education does not teach people how to think but neither does he think that studying how to think is the answer

His computer language Logo is designed not just to help children teach themselves basic rules of thinking and problem solving but also to assist in the learning of basic knowledge skills of numeracy and literacy — the limits to Logo are set by the individual

Both Papert and de Bono agree on the importance of the visual in the enhancement of the learning process But, whereas de Bono concentrates on diagrammatic forms of representation Logo provides an extremely flexible visual device for exploring mathematics and the world of words

De Bono separates thinking from knowledge and assumes a curriculum whereas the whole ideal of Logo is that the child constructs its own curriculum with support from the teacher as necessary A Logo system on a home computer helps the child learn without a teacher or a curriculum

Whereas de Bono sees the teaching of thinking as teaching following a structured course/curriculum — with every person following a similar course Papert sees the child as directing its own study and learning from others through discussing the many different results of self direction

Logo is also admirably suited to collaborative enterprises to experimentation In Logo errors are not mistakes they are opportunities to improve one s understanding

The de Bono style of presentation of thinking has been very successful but it is less radical than the approach embodied in Logo

And there are good reasons to believe that of the two Logo is the more comprehensive and useful approach

Boris Allan

Leave it to Hackit

Puzzle No 115

Hackit proved to be a very popular piece of software No longer do you need to actually write programs — *Hackit* does it all for you

That is it s a program to write the program to run the computer!

All you do is feed in the features that you wish to use and leave the rest to the program It s quite reasonably priced too at somewhere between five and ten quid and I understand that over the last couple of years since it went on sale, the demand has been such that the copies are snapped up as soon as they reach the shops To date total sales have reached the grand total of one hundred and sixty thousand pounds and one penny!

The weekly production rate has been constant since the program went on sale Can you say

```
> 10 PRINT "PRO
GRAM"
  20 GOTO 10
  30 REM CLONE!
```

how many have been produced each week how many weeks they have been on sale and the price of each copy?

Solution to Puzzle No 110

The program calculates all possible totals obtainable with different combinations of the coins (with at least one of each denomination present) and then scans the array to determine which values are obtainable in twenty eight ways

```
10 DIM AMT(190) 20 FOR B = 1 to 5 30 FOR C 1 to 5
40 FOR D 1 to 5 50 FOR E 1 to 5 60 FOR F = 1 TO 5
70 LET T 1*B + 2*C 5*D + 10*E 90*F 80 LET
AMT(T) - AMT(T) + 1 90 NEXT F 100 NEXT E 110
NEXT D 120 NEXT C 130 NEXT B 140 FOR N 1 TO
190 150 IF AMT(N) 28 THEN PRINT N 160 NEXT N
```

This gives two results 85 and 143 but as the total must be a multiple of five the correct total cost was 85 pence and each ice-cream was 17 pence

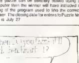
Winner of Puzzle No 110

The winner is John Harrison Chapel Lane Long Marston Tring who receives £10

Rules

If the puzzle can be sensibly solved using a computer then the winner will have included a listing of the program used to find the correct answer The closing date for entries to Puzzle No 115 is July 27

The Hackers







but seriously

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